



– Final –



# Environmental Assessment for Hawaii Tracking Station A-Side Antenna Remote Block Change Upgrade at Kaena Point Satellite Tracking Station, Hawaii

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<b>14. ABSTRACT</b>  This Environmental Assessment (EA) documents the potential environmental impacts of the construction and operation of a new Hawaii Tracking Station A-Side radome antenna at Kaena Point Satellite Tracking Station (KPSTS) on Oahu, Hawaii. The new antenna would replace the existing A-Side antenna configuration. The Proposed Action also includes the demolition of one of the legacy antenna facilities at KPSTS.						
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**FINDING OF NO SIGNIFICANT IMPACT**  
**ENVIRONMENTAL ASSESSMENT FOR HAWAII TRACKING STATION A-SIDE ANTENNA**  
**REMOTE BLOCK CHANGE UPGRADE AT KAENA POINT SATELLITE TRACKING**  
**STATION**

**AGENCY:** United States Air Force (USAF)

**BACKGROUND:** The USAF prepared an Environmental Assessment (EA) to evaluate the potential environmental consequences of completing the Remote Block Change (RBC) upgrade of the Hawaii Tracking Station (HTS) A-Side Antenna at the Kaena Point Satellite Tracking Station (KPSTS), on Oahu, Hawaii. The attached EA, which is hereby incorporated by reference, was prepared in accordance with the National Environmental Policy Act (NEPA); Executive Order 12114 (*Environmental Effects Abroad of Major Federal Actions*); Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); and 32 CFR Part 989 (*Environmental Impact Analysis Process*).

**DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:** The Proposed Action is the construction of a new HTS A-Side antenna RBC facility to replace the existing A-Side antenna configuration and the demolition of one of the existing antenna facilities. The RBC facility includes installation of a tracking antenna, ringwall, and inflatable radome at the existing helipad location. A new helipad would be constructed northwest of the RBC facility. The Proposed Action also includes installation of an electronics suite at the existing Operations Building (Building 10) and placement of trenched fiber-optic and radio frequency cable to link the electronics suite to the new antenna. The Proposed Action would bring the A-Side antenna configuration into compliance with the operational requirements for the Satellite Control System. The Proposed Action would also include the demolition of one of two legacy antenna facilities at KPSTS.

**ENVIRONMENTAL EFFECTS:** The USAF assessed potential impacts of the Proposed Action at KPSTS. For this location, the following resources could be affected and were analyzed in the EA: air quality, noise, water resources, biological resources, cultural resources, safety and occupational health, hazardous materials and waste management, infrastructure, visual resources, and coastal zone management. Within the Global Environment, potential impacts on the global atmosphere were also assessed. A summary of the analysis results is provided below.

**Kaena Point Satellite Tracking Station**

Air emissions from the station would be increased temporarily by proposed activities, but would not exceed Federal and state *de minimis* (minimal importance) thresholds for criteria pollutants, be regionally significant, or contribute to a violation of KPSTS's air operating permits, and would conform completely to the Hawaii State Implementation Plan. Annual emissions would not present a hazard to personnel or to the public. Temporary increases in noise would occur primarily from the use of heavy equipment during construction. The USAF would fully comply with the State of Hawaii's Community Noise Program, as outlined in the Hawaii Administrative Rules 11-46.

Because the proposed construction area is over an acre in size, a storm water discharge permit would be obtained and a project-specific Storm Water Management Plan completed. Although the proposed construction activities might cause some wildlife species to temporarily leave the immediate area, the activities are not expected to have a noticeable effect on local populations. Overall, the Proposed Action is expected to have no effect on Federally listed species. Through the implementation of mitigation measures during construction and demolition activities, no historical or archaeological resources would be significantly impacted.

For the proposed activities at KPSTS, all program personnel would be required to comply with applicable USAF, Federal, and state health and safety regulations and standards. By adhering to these established and proven safety standards and procedures, the level of risk to all personnel and the public would be minimal. For radio frequency (RF) transmissions, the new antenna would be operated and maintained in accordance with established USAF and industry health standards and requirements. During operations of the antenna, RF surveys would be conducted to



validate the calculated and estimated safe distances and safe exposure limits for uncontrolled (general population) and controlled (employees) personnel. KPSTS personnel and contractors would manage all hazardous materials and wastes in accordance with well-established policies and procedures. Hazardous material and waste-handling requirements would not exceed current capacities, and management programs would not have to change.

There would be no significant impacts to existing infrastructure (utilities and local roads). Although the proposed antenna would be visible along Kuaokala Ridge from coastal areas, the visual changes to the viewshed would be minimal. In addition, the USAF would comply with Federal Coastal Zone Consistency regulations and the Hawaii Coastal Zone Management Program.

Interagency coordination or consultations were conducted with the US Fish and Wildlife Service; Hawaii Department of Business, Economic Development, and Tourism (Hawaii Coastal Zone Management Program); the Hawaii State Historic Preservation Division; and several Native Hawaiian Organizations. No major issues were identified as a result of this coordination and consultations.

### **Global Environment**

Regarding potential effects on the global atmosphere, the Proposed Action would not release any ozone-depleting gases that could impact the stratospheric ozone layer. Additionally, the limited amount of greenhouse gas emissions would not contribute significantly to global warming.

**PUBLIC REVIEW AND COMMENT:** For the Proposed Action at KPSTS in Hawaii, the USAF published an availability notice for public review of the Draft EA and Draft Finding of No Significant Impact (FONSI) in the *Honolulu Star-Advertiser* on December 14, 2010, initiating a 15-day review period that ended on December 29, 2010. The USAF placed copies of the Draft EA, including the Draft FONSI, in the Waianae and Waialua public libraries and on the Internet at <http://www.hts-ea.com>. Following the public review period, one agency and one Native Hawaiian Organization responded with comments, which are addressed in the Final EA.

**POINT OF CONTACT:** The point of contact for questions, issues, and information relevant to the EA for HTS is Mr. Leonard Aragon, SMC/ENE, 483 North Aviation Boulevard, El Segundo, CA, 90245-2808. Mr. Aragon also can be reached by calling (310) 653-1222, by facsimile at (310) 653-1210, or by e-mail at [Leonard.Aragon@losangeles.af.mil](mailto:Leonard.Aragon@losangeles.af.mil).

**CONCLUSION:** An analysis of the Proposed Action concludes that its implementation will not have significant environmental impacts on the human and natural environment, either by itself or cumulatively with other actions. After thoroughly considering the facts herein, the undersigned finds that the Proposed Action is consistent with existing environmental policies and objectives set forth in NEPA and its implementing regulations. Therefore, an Environmental Impact Statement is not required.

### **APPROVED:**

  
**LAWRENCE W. HINKIN, Colonel, USAF**  
Acting Director of Logistics, Installations  
and Mission Support

17 FEB 11

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## ***ACRONYMS AND ABBREVIATIONS***

50 SW	50th Space Wing
AFB	Air Force Base
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFOSH	Air Force Occupational Safety and Health
AFSCN	Air Force Satellite Control Network
AFSPC	Air Force Space Command
AFSPCMAN	Air Force Space Command Manual
AFTOX	Air Force Toxic Chemical Dispersion Model
AFWA	Air Force Weather Agency
AICUZ	Air Installation Compatible Use Zone
ANSI	American National Standards Institute
AQCR	Air Quality Control Region
ARPA	Archaeological Resources Protection Act
ARTS	Automated Remote Tracking Station
BMP	Best Management Practices
BO	Biological Opinion
C	Celsius
CAA	Clean Air Act
CCEMP	Consolidated Comprehensive Emergency Management Plan
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CH <sub>4</sub>	methane
cm	Centimeter
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CY	Calendar Year
CZMA	Coastal Zone Management Act
dB	decibel
dBA	a-weighted decibels
DBEDT	Department of Business, Economic Development and Tourism
DLNR	Department of Land and Natural Resources
DNL	day-night sound level
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EAEST	EA Engineering, Science, and Technology
EELV	Evolved Expendable Launch Vehicle
EG	Emergency Generator
EIS	Environmental Impact Statement
F	Fahrenheit
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FONSI	Finding of No Significant Impact
FR	Federal Register
ft	Feet

ft/s	Feet per Second
gal	Gallon
GHG	greenhouse gases
GHz	Gigahertz
GPR	Ground Penetrating Radar
HAP	hazardous air pollutant
HAR	Hawaii Administrative Rules
HCZMP	Hawaii Coastal Zone Management Program
HDH	Dillingham Airfield
HDOH	Hawaii Department of Health
HI	Hawaii
HPA	High Powered Amplifier
HTS	Hawaii Tracking Station
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz
ICAO	International Civil Aviation Organization
IEEE	Institute of Electrical & Electronics Engineers, Inc.
IFL	Inter-Facility Link
INRMP	Integrated Natural Resource Management Plan
IRP	Installation Restoration Program
ISOON	Improved Solar Observing Optical Network
ITSI	Innovative Technical Solutions, Inc.
kg	Kilogram
kHz	Kilohertz
km	Kilometer
kph	Kilometers per Hour
KPSTS	Kaena Point Satellite Tracking Station
kVA	Kilovolt-amperes
kW	Kilowatt
L	Liter
lb	Pound
L <sub>eq</sub>	equivalent sound level
LTO	landing and takeoff
m	Meter
mi	Mile
MPE	Maximum Permissible Exposure
mph	Miles per Hour
m/s	Meters per Second
MUE	Mission Unique Equipment
mW/sq cm	milliwatt per centimeter squared
N <sub>2</sub> O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NESHAP	National Emission Standard for Hazardous Air Pollutants
NGPC	Notice of General Permit Coverage
NIR	Non-ionizing radiation
nmi	Nautical mile
NOAA	National Oceanic and Atmospheric Administration
NO <sub>x</sub>	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System

NRHP	National Register of Historic Places
OPLAN	Operations Plan
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PEL	Permissible Exposure Level
PM <sub>10</sub>	particulate matter less than 10 microns in diameter
PM <sub>2.5</sub>	particulate matter less than 2.5 microns in diameter
PMP	Pest Management Plan
ppm	parts per million
RBC	Remote Block Change
RCRA	Resource Conservation and Recovery Act
RF	Radio Frequency
RIMS	Radio Interference Measuring Set
ROI	Region of Influence
RTS	Remote Tracking Station
SCAQMD	South Coast Air Quality Management District
SHPD	State Historic Preservation Division
SMC	Space and Missile Systems Center
SMC/ENE	SMC Acquisition Civil/Environmental Engineering Division
SMC/SN	SMC Satellite Control and Network Systems Division
SO <sub>2</sub>	sulfur dioxide
SOPS	Space Operations Squadron
SRS	Solar Radio Spectrograph
SWI	Space Wing Instruction
SWMP	Storm Water Management Plan
SWMU	Solid Waste Management Unit
TCPs	Traditional Cultural Properties
US	United States
USAF	US Air Force
USC	United States Code
USDOT	US Department of Transportation
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compound
WFMP	Wildland Fire Management Plan
WMO	World Meteorological Organization
µg/m <sup>3</sup>	micrograms per cubic meter



# 1.0 PURPOSE OF AND NEED FOR ACTION

## 1.1 INTRODUCTION

Kaena Point Satellite Tracking Station (KPSTS) is located on the northwest tip of the Island of Oahu, (Figure 1-1), approximately 25 miles (mi) (40 kilometers [km]) northwest of Joint Base Pearl Harbor Hickam, Hawaii (HI). KPSTS is operated by Detachment 3, 21st Space Operations Squadron (SOPS) of the 50th Space Wing, United States Air Force (USAF). The Station is located at the top of Kuaokala Ridge on 153 acres (62 hectares) of land leased from the State of Hawaii.

The Space and Missiles Systems Center Satellite Control and Network Systems Division (SMC/SN) proposes to construct and operate a new Hawaii Tracking Station (HTS) A-Side Remote Block Change (RBC) facility within KPSTS, and demolish one of two legacy antenna facilities at KPSTS.

In support of SMC/SN and KPSTS, the SMC Acquisition Civil/Environmental Engineering Division (SMC/ENE) determined that an environmental assessment (EA) is required to assess the potential environmental effects from the proposed demolition and construction activities, and new antenna operations. This EA was prepared in accordance with the following regulations, statutes, and standards:

- National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321-4370f)
- Executive Order 12114 (*Environmental Effects Abroad of Major Federal Actions*) (Office of the President, 1979)
- The President's Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508) (CEQ, 2009)
- *Environmental Impact Analysis Process* (32 CFR Part 989) (USAF, 2009)

## 1.2 BACKGROUND

The USAF established KPSTS in 1958 to support the Discoverer Satellite Program, and KPSTS was under the stewardship of the 15th Airlift Wing (formerly the 15th Air Base Wing) at Hickam Air Force Base (AFB). In the past, KPSTS has supported Department of Defense (DoD) space programs such as

### **The Purpose of an Environmental Assessment (EA)**

An EA is prepared by a Federal agency to determine whether an action it is proposing would significantly affect any portion of the environment.

The intent of an EA is to provide project planners and Federal decision-makers with relevant information on the impacts that a proposed action might have on the human and natural environments.

If the study finds no significant impacts, then the agency shall record the results of that study in an EA and publish a Finding of No Significant Impact (FONSI). The agency may then proceed with the action.

However, if the results of the EA indicate that there would be potentially significant impacts associated with the action, then the agency must issue a Notice of Intent and prepare an Environmental Impact Statement (EIS).

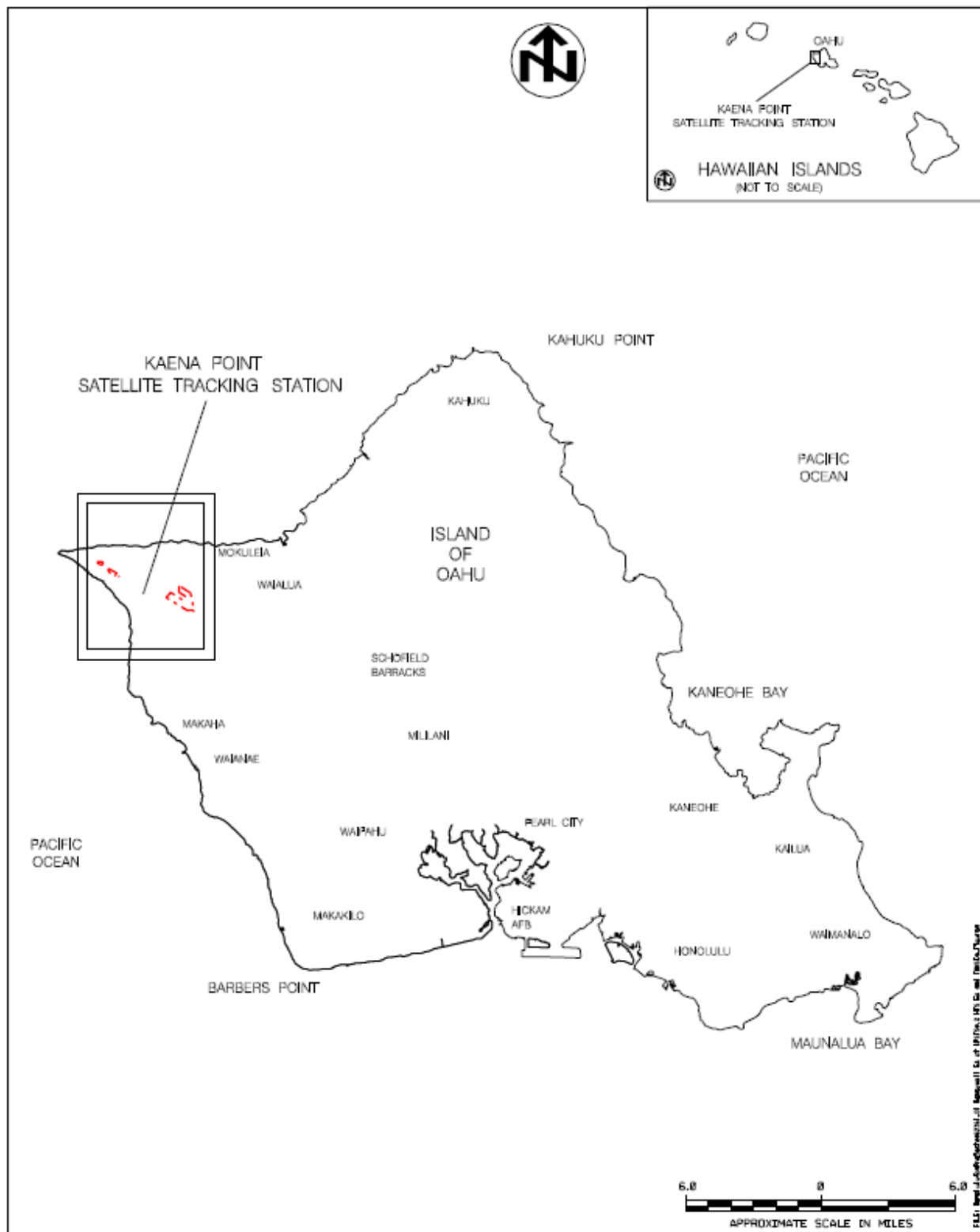


Figure 1-1. Location of Kaena Point Satellite Tracking Station on Oahu, Hawaii

the Satellite Communications Network, the Missile Detection and Alarm System, and the Aerospace Defense Command.

Under the 50th Space Wing, the current mission of KPSTS is to support the SMC/SN and the Air Force Satellite Control Network (AFSCN). The AFSCN is a global infrastructure of control centers, Remote Tracking Stations (RTSs), and communications links that provide the highly reliable command and control, communications, and range systems required to support the nation's surveillance, navigation, communications, and weather satellite operations. The AFSCN is the DoD common user network that provides satellite state-of-health, tracking, telemetry, and commanding for various operational satellite systems including: Defense Meteorological Satellite Program, Global Positioning System, Defense Satellite Communications System, Defense Support Program, Military Strategic and Tactical Relay Satellite, Advanced Extremely High Frequency Satellite, and Skynet. Currently, the AFSCN consists of control centers in California and Colorado, eight RTSs located around the world (including KPSTS), and several transportable systems based out of the US.

The Air Force Space Command (AFSPC) performs operations, maintenance, modernization, and sustainment of the AFSCN system to provide operational capabilities validated by DoD Joint Staff and USAF requirements. As part of the ongoing AFSCN Improvements and Modernization program, the AFSPC is implementing network upgrades which will meet operational requirements to replace non-standard, unsupportable equipment with more reliable, maintainable, and standardized hardware and software. This new equipment will enable AFSPC satellite operations to be performed with fewer personnel and will significantly reduce hardware/software maintenance costs. The principal efforts within this program are: Network Operations Upgrades, Communications Upgrades, and Range RTS Upgrades. The proposed new HTS A-Side RBC antenna at KPSTS is part of the ongoing upgrade of RTSs and other range assets.

### **1.3 PURPOSE OF THE PROPOSED ACTION**

The DoD and USAF are continuing a significant investment to improve and modernize the AFSCN to meet the requirements of the growing inventory of operational and developmental DoD, National, Civil, and Allied satellite systems. In order for KPSTS to continue its mission supporting the AFSCN, the existing A-Side antenna system must be upgraded with a newer system that is more reliable, maintainable, and interoperable with the newer satellite systems to assure responsive, effective support to warfighting forces.

### **1.4 NEED FOR THE PROPOSED ACTION**

The nation's space launch; ballistic missile and aeronautical testing; and surveillance, navigation, communications, and weather satellite systems require the support of the AFSCN. Command and control upgrades of AFSCN antenna systems are needed to standardize, automate, and ensure the interoperability of the RTSs through the replacement of outdated systems with modern technology equipment in order to reduce failures, correct operational deficiencies, and reduce operating and sustainment costs. This modernization effort includes the replacement of the A-Side legacy antenna facility at KPSTS, which is nearing the end of its design life.

### **1.5 SCOPE OF THE ENVIRONMENTAL ASSESSMENT**

The EA documents the environmental analysis of the construction and operation of a new HTS A-Side antenna RBC facility at KPSTS to replace the existing A-Side antenna configuration, and the demolition of one of two existing legacy antenna facilities (Figure 1-2). The RBC facility includes installation of a





tracking antenna, ringwall, and inflatable radome at the existing helipad location. A new helipad would be constructed northwest of the RBC facility. The Proposed Action also includes installation of an electronics suite at the existing Operations Building (Building 10) and placement of trenched fiber-optic and radio frequency cable to link the electronics suite to the new antenna. The Proposed Action would bring the A-Side antenna configuration into compliance with the operational requirements for the Satellite Control System. Construction for the new antenna facility is expected to begin in early Calendar Year (CY) 2011. The demolition of one of the two legacy antenna facilities would not occur until CY 2013 at the earliest.

In accordance with the CEQ and USAF regulations for implementing NEPA (40 CFR 1502.14(d) and 32 CFR 989.8(d), respectively), this EA also analyzes the No Action Alternative that serves as the baseline from which to compare the Proposed Action. Under the No Action Alternative, the new HTS A-Side antenna would not be constructed at KPSTS and no legacy antenna facilities at the Station would be demolished.

## **1.6 DECISIONS TO BE MADE**

Supported by the information and environmental analysis presented in this EA, the USAF will decide whether to implement the proposed antenna construction, operation and demolition activities, or to select the No Action Alternative. If the Proposed Action proceeds, decisions on which legacy antenna to demolish will depend on the condition of the antenna facilities and the need for future antenna upgrades.

## **1.7 PUBLIC NOTIFICATION AND REVIEW**

In accordance with the CEQ (2009) and USAF (2009) regulations for implementing NEPA, the USAF solicited comments on the Draft EA from interested and affected parties. A Notice of Availability for the Draft EA, and the enclosed Draft FONSI, was published on December 14, 2010 in the *Honolulu Star-Advertiser* newspaper for the KPSTS region. Copies of the Draft EA/Draft FONSI were placed in these local libraries:

- Waianae Public Library, 85-625 Farrington Hwy. Waianae, HI 96792-2406
- Waialua Public Library, 67-068 Kealohanui Street Waialua, HI 96791-8100

Copies of the Draft EA/Draft FONSI were also available over the Internet at <http://www.hts-ea.com>. A list of agencies and organizations that were sent copies of the document is provided in Chapter 8.0.

Following the 15-day public review period (as specified in the newspaper notice), one agency and one Native Hawaiian Organization responded with comments. Appendix C of this Final EA contains a reproduction of the comment letters and the USAF's responses to the comments. A copy of the Final EA and the enclosed signed FONSI was sent to those agencies, organizations, and individuals who provided comments on the Draft EA/Draft FONSI, or who specifically requested a copy of the final documents. The Final EA and signed FONSI are also available over the Internet at <http://www.hts-ea.com> for a limited time.

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## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Within this chapter, Section 2.1 provides a description of the Proposed Action, including the construction and operation of the HTS A-Side RBC facility within KPSTS. Section 2.2 provides a description of the No Action Alternative. Alternatives to the Proposed Action that were considered and eliminated from further study are discussed in Section 2.3. A summary comparison of the environmental consequences associated with the Proposed Action and the alternative actions is presented in Section 2.4. Finally, identification of the Preferred Action is presented in Section 2.5.

### 2.1 PROPOSED ACTION

#### 2.1.1 INSTALLATION OF NEW A-SIDE ANTENNA

##### 2.1.1.1 Site Preparation and Construction

The Proposed Action requires the demolition of the existing KPSTS helipad and adjacent parking lot near Building 10. The new A-Side antenna would be sited at this location (see Figure 2-1). The site would also require excavation for the foundation to support the antenna pedestal and ringwall.

The new 43-foot (ft) (13-meter [m]) diameter antenna dish would be affixed on top of the pedestal surrounded by a 22-ft (6.7-m) high reinforced concrete ringwall. The antenna pedestal would include an internal room for housing the transmitters, High Powered Amplifiers (HPAs), and other electronic equipment utilized for signal reception, tracking, remote control, and status functions. The antenna would be enclosed by a 76-ft (23-m) diameter inflatable radome supported by the ringwall. The final height of the new radome would be approximately 83 ft (25 m) above ground level. Two anemometer towers would be installed adjacent to the radome at a height that is equal to the height of the radome's equator (approximately 42 ft [12.8 m] high). Radome pressurization would be maintained by an electric-powered inflatable blower package.

The design would include a Heating, Ventilation, Air Conditioning (HVAC) system to environmentally control the HPA Room as well as a Mechanical Room to house the new diesel-operated emergency generator (EG). The EG would provide backup power to the radome blower package in the event site power is lost. A new, dual-walled sub-base diesel fuel tank (approximately 180-gallon [680-liter] capacity) with overfill protection and visual and audible alarming would be provided for the EG. The tank would have labels affixed that would meet the requirements of 40 CFR 80.572. For security purposes, a new perimeter fence would also be installed around the antenna site.

In addition to the new facility, a suite of electronic equipment (core electronics) would be installed in the existing Operations Building (Building 10). The core electronics would be connected to the antenna via an approximately 350 ft (107 m) long Inter-Facility Link (IFL) cable trough, which would hold both copper and fiber optic cables.

The helipad would be relocated approximately 230 ft (70 m) northwest of the new antenna (see Figure 2-1). This relocation would require clearing and grubbing of all vegetation at the new helipad site, regrading and compaction of the soil, and repaving. Two road re-alignments would also be required next to the new antenna and new helipad sites. In total, approximately 1 acre (0.4 hectares) of land area would

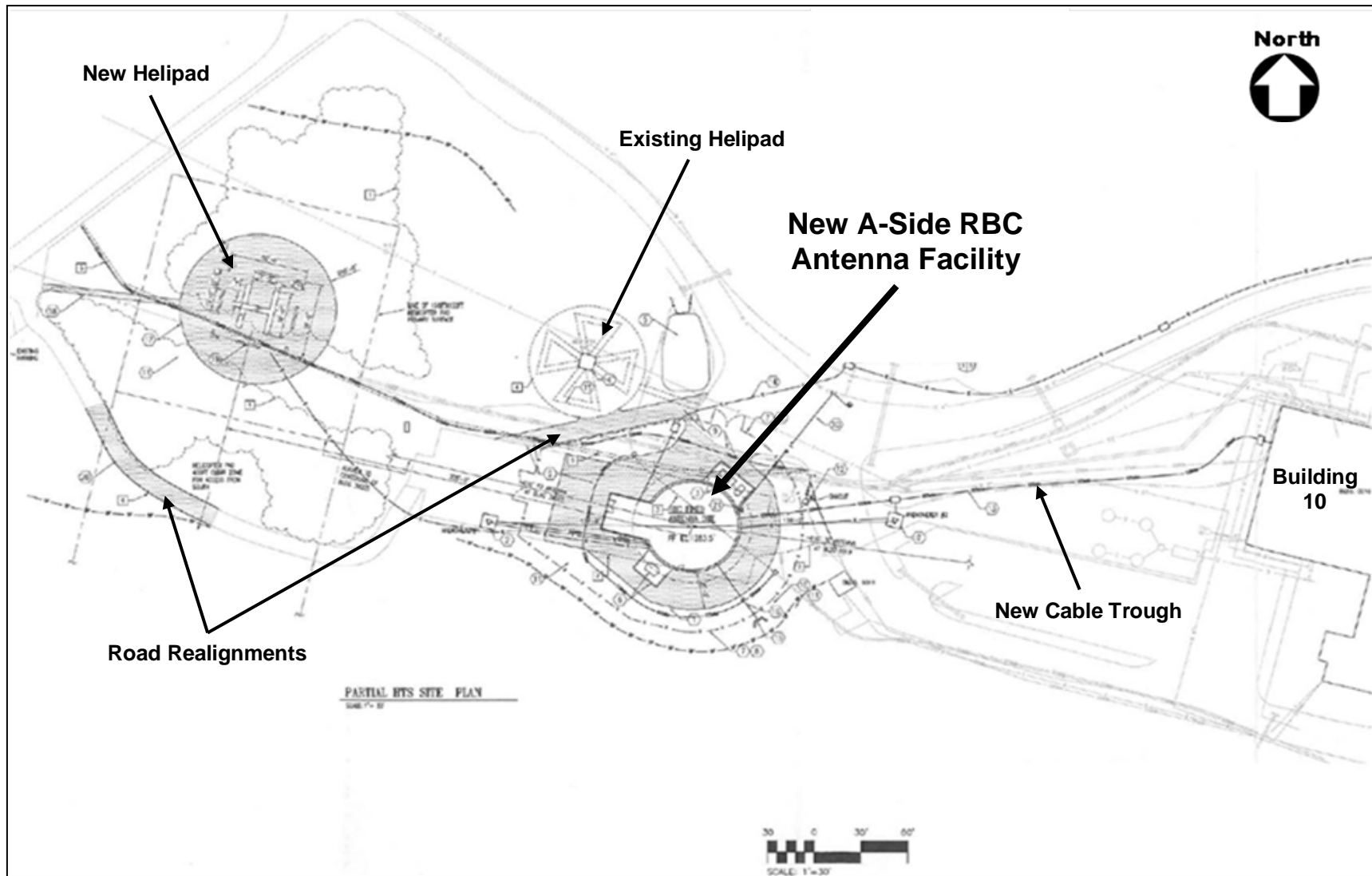


Figure 2-1. Preliminary Site Plan for the Proposed A-Side Antenna Facility

be disturbed during construction of the new antenna and relocation of the helipad. Most of the clearing, grubbing and excavation work, however, would occur in previously disturbed or existing paved areas.

Construction activities would require use of heavy equipment and pneumatic tools, including mobile diesel-powered cranes, heavy trucks, bull dozer, backhoe, forklifts, trencher, boring machine, and air compressors. Construction staging areas also would be located on adjacent open or paved areas.

#### **2.1.1.2 Operations and Maintenance**

The HTS A-Side radome would be made of fabric that would require the continuous operation of an inflatable blower package. The estimated power requirement for the radome would be 155 kilovolt-amperes (kVA). The estimated electrical load would be 65 kVA. An EG would be on site to provide backup power to the radome blower package in the event site power is lost. This EG would be a 50 kilowatt (kW) diesel unit that would only be operated when commercial power is unavailable or for training/testing, for a maximum of 100 hours per year. Normal maintenance run-times of the EG would be 30 minutes per week. The EG would have the capability to run up to 3 days in order to keep the radome inflated if commercial power goes down because of bad weather or other conditions. No additional personnel would be required on site for the operation and maintenance of the new facility.

Small quantities of glycol, lubricants, and coatings would be used to clean and maintain the antenna and the EG for the radome.

#### **2.1.2 DEMOLITION OF LEGACY ANTENNA**

As part of the Proposed Action, one of the existing antennas at KPSTS would be decommissioned and the building demolished. The preference would be to retain the legacy 60-ft (18-m) antenna and associated building(s), known as Automated Remote Tracking Station (ARTS) Side-A, and demolish the legacy 46-ft (14-m) antenna, known as ARTS Side-B. The demolition would not occur until the new HTS A-Side antenna facility is operational. For analysis purposes, the two alternatives for antenna demolition are identified as:

- Alternative 1 – Demolition of the legacy ARTS Side-A antenna, Building 39005
- Alternative 2 – Demolition of the legacy ARTS Side-B antenna, Building 39006

Figure 1-2 shows the location of these two alternatives. Depending on which alternative is selected and the potential for future facility upgrades, demolition may involve complete removal of the existing antenna, radome, pedestal, and foundation, or it could involve only a partial demolition of the overall structure, leaving the foundation to be used for a future facility. No new facilities, however, could be built until additional environmental analyses separate from this EA are completed.

Similar to the construction activities for the new antenna, demolition activities would also require use of heavy equipment and pneumatic tools, including mobile diesel-powered cranes, heavy trucks, bull dozer, backhoe, forklifts, and air compressors. Complete removal of the structure foundation would disturb approximately 0.3 acres (0.12 hectares) of ground area. Staging areas would be located on adjacent open or paved areas. All waste materials would be disposed of in accordance with Federal, state and DoD regulations.

### **2.2 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the existing legacy A-Side antenna at KPSTS would continue to be used. Within the next several years, however, antenna maintenance issues and/or incompatibilities with

the AFSCN network could force the USAF to terminate operational use of the antenna. Such a scenario is unacceptable because it would result in loss of a critical US satellite communication link over the North Pacific region.

### **2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION**

Several location alternatives to the Proposed Action were considered during the planning process. As part of the planning process, AFSCN prepared an Antenna Location, Integration, Certification, and Execution Plan (AFSCN, 2009) to provide the information necessary for the government to decide where to locate the new antenna facility to meet the needs of KPSTS and comply with applicable regulations.

One proposal would have included the construction of a new HTS A-Side antenna facility located further from the Operations Building (Building 10) than the Proposed Action. Under such circumstances, Buildings 20, 21, and 14111 would have been demolished, and the new HTS A-Side antenna RBC facility would have been constructed in their place. The IFL trenched cable trough would have extended approximately 2,500 ft (762 m) between Building 10 and this proposed site.

A second alternative would have been to locate the proposed antenna facility 200 to 500 ft (61 to 152 m) east of Building 10. This alternative would have included the demolition of Buildings 16, 17, and 18, as well as Building 19, which is an active warehouse at KPSTS. The new RBC antenna facility would have been constructed in the same location as the demolished buildings. The IFL trenched cable trough would have extended several hundred feet between Building 10 and the proposed site. The second proposal would have also required that a new warehouse be constructed elsewhere at KPSTS to replace the functions of Building 19.

The AFSCN rejected these two alternatives because they added additional costs without additional benefits, including the required abatement of asbestos containing materials and lead-based paint associated with the demolition of buildings. In addition, cultural resource impacts associated with the demolition of a possibly eligible Cold War-era building could occur if the first proposal was chosen.

### **2.4 COMPARISON OF ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES**

Table 2-1 presents a comparison of the potential environmental consequences of the Proposed Action and the No Action Alternative for those locations and resources affected. Only those resource areas potentially affected are addressed (see Chapter 3.0 for a rationale of resources analyzed). A detailed discussion of the potential effects is presented in Chapter 4.0 of this EA.

### **2.5 IDENTIFICATION OF THE PREFERRED ACTION**

The USAF's Preferred Action is to implement the Proposed Action at KPSTS, as described in Section 2.1 of this EA.

**Table 2-1. Comparison of Potential Environmental Consequences**

<b>Locations and Resources Affected</b>	<b>Proposed Action</b>	<b>No Action Alternative</b>
<b>Kaena Point Satellite Tracking Station, Oahu, Hawaii</b>		
Air Quality	Short-term minor and long-term negligible effects would be expected. The total direct and indirect emissions from the Proposed Action would be <i>de minimis</i> (of minimal importance), not be regionally significant, and not contribute to a violation of KPSTS's air operating permit or any air regulation.	The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related impacts to air quality would not occur. Conditions are not expected to change for the Affected Environment in Section 3.1.1 of the EA.
Noise	Short- and long-term minor adverse impacts would be expected. Impacts would be related to construction activities and the maintenance and operation of the antenna's backup generator. The USAF would fully comply with the State of Hawaii's Community Noise Program, as outlined in the Hawaii Administrative Rules (HAR) 11-46. This regulation specifies a permitting process for noise sources (e.g., construction and equipment operation) that exceed allowable sound levels based on the land use of the surrounding area. A Hawaii Department of Health (HDOH) Noise Variance application would be submitted, as necessary, for construction/demolition-related noise and emergency generator-related noise.	The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related impacts to noise would not occur. Conditions are not expected to change for the Affected Environment in Section 3.1.2 of the EA.
Water Resources	Runoff from the construction site would be controlled with the implementation of Best Management Practices (BMPs) and measures as required by the project HDOH Notice of Intent and Storm Water Management Plan (SWMP) and the KPSTS SWMP. In addition, a dewatering pond would be installed and maintained during the construction phase to capture storm water collected in open excavations.  Groundwater withdrawals may be increased temporarily during construction of the Proposed Action.	The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related impacts to water resources would not occur. Conditions are not expected to change for the Affected Environment in Section 3.1.3 of the EA.
Biological Resources	The vast majority of activities associated with the Proposed Action occur in previously disturbed lands, including roads, parking lots, and other paved and landscaped areas. The relocation of the helipad for the Proposed Action would impact approximately 0.6 acre (0.2 hectare) of a mostly previously disturbed area dominated by invasive woody plant species.  No impacts on Federally-listed threatened or endangered species or critical habitats would occur, and no long-term impacts to other wildlife would result from operation of the Proposed Action.	The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related impacts to biological resources would not occur. Conditions are not expected to change for the Affected Environment in Section 3.1.4 of the EA.
Cultural Resources	The Proposed Action is expected to have "no adverse effect" on archaeological resources or other native Hawaiian cultural resources based on surveys completed. The majority of ground disturbing activities would occur in previously disturbed or existing paved areas. To reduce the potential for impacts to archaeological resources, continuous archaeological monitoring would	The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related



**Table 2-1. Comparison of Potential Environmental Consequences**

<b>Locations and Resources Affected</b>	<b>Proposed Action</b>	<b>No Action Alternative</b>
	<p>be conducted during all ground-disturbing activities.</p> <p>Although the project includes the demolition of a Cold War-era antenna facility, neither of the two alternative facilities considered for demolition are over 50 years old. Thus, KPSTS considers the demolition of the antenna facility to have “no adverse effect” on historic properties.</p> <p>In their written response to the consultation request, the Hawaii State Historic Preservation Division concurred with KPSTS’s finding that the project would have “no adverse effect” on historic properties. All seven of the Native Hawaiian Organizations consulted also concurred or gave no objection to the project.</p>	<p>impacts to cultural resources would not occur. Conditions are not expected to change for the Affected Environment in Section 3.1.5 of the EA.</p>
Safety and Occupational Health	<p>For the Proposed Action, workers (including both military personnel and contractors) would be required to comply with applicable Air Force Occupational Safety and Health (AFOSH), Occupational Safety and Health Administration (OSHA), and Hawaii Occupational Safety and Health regulations and standards. Because all construction-related activities would occur well within installation boundaries, the general public would not be exposed to health and safety risks.</p> <p>For radio frequency (RF) transmissions, the new antenna would be operated and maintained in accordance with established USAF and industry health standards and requirements. During operations of the antenna, RF telemetry tests would be conducted to validate the calculated and estimated safe distances and safe exposure limits for uncontrolled (general population) and controlled (employees) personnel. Operation of the new antenna would not allow any land areas within 2,500 ft (762 m) to be exposed to the main beam. Antenna safety features, including low elevation mechanical stops and software limits, would be used to prevent personnel on the ground from being exposed to hazardous RF radiation levels.</p> <p>Based on the safety precautions that the USAF would have in place during project implementation and operations, no significant impacts to safety and occupational health are expected.</p>	<p>The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related impacts to safety and occupational health would not occur. Conditions are not expected to change for the Affected Environment in Section 3.1.6 of the EA.</p>
Hazardous Materials and Waste Management	<p>During demolition of one of the legacy antennas, scrap metal and electronic equipment would be taken to the Defense Reutilization and Marketing Office (DRMO) in Kapolei, Oahu, for disposal, recycling, and reuse. Other construction and demolition waste materials (e.g., siding, concrete, sheetrock) would be disposed of at an appropriate landfill licensed to accept such materials. Abatement procedures for asbestos and lead-based paint may be necessary during the demolition of the legacy antenna and modifications to Building 10 for the core electronics.</p> <p>There would be no negative impacts associated with project-related hazardous substances.</p>	<p>The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related impacts to hazardous materials and waste management would not occur. Conditions are not expected to change for the Affected Environment in Section 3.1.7 of the EA.</p>

**Table 2-1. Comparison of Potential Environmental Consequences**

<b>Locations and Resources Affected</b>	<b>Proposed Action</b>	<b>No Action Alternative</b>
	Hazardous wastes generated or encountered during the construction and demolition phases of the Proposed Action would be handled in accordance with applicable Federal, state, and DoD regulations.	
Infrastructure	Implementation of the Proposed Action would not negatively impact the utilities at KPSTS. Short-term minor adverse effects on traffic would be expected. Traffic would increase due to additional construction vehicles and possible minor traffic delays along the KPSTS access road. These effects would be temporary in nature and would end with the construction and demolition phases. No measurable long-term effects on KPSTS traffic or gate traffic would be expected to result from the new antenna operations.	The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related impacts to infrastructure would not occur. Conditions are not expected to change for the Affected Environment in Section 3.1.8 of the EA.
Visual Resources	Although the proposed HTS A-Side RBC antenna would be visible along Kuaokala Ridge from the Farrington Highway and beach areas, the visual changes to the ridgeline would be minimal. A photo rendition of the new antenna alongside existing KSPTS antennas within the same area shows little change to the viewshed.	The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related impacts to visual resources would not occur. Conditions are not expected to change for the Affected Environment in Section 3.1.9 of the EA.
Coastal Zone Management	<p>Construction and demolition activities on KPSTS would be short-term in duration and are expected to have little or no effect on recreational areas outside of the Station. Public access to Kuaokala Forest Reserve and Kuaokala Game Management Area, however, would be affected due to increased construction-related traffic on the Station access road from Farrington Highway. Brief traffic delays could occur when trucks and other heavy equipment use or temporarily block the access road. Steps would be taken to minimize traffic delays. No measurable long-term impacts to beach or other coastal resources are expected from the construction and demolition activities. The USAF would comply with Federal Coastal Zone Consistency regulations and the Hawaii Coastal Zone Management Program (HCZMP).</p> <p>Through consultations with the Hawaii Office of Planning, the Proposed Action was determined to be consistent with the enforceable policies of the HCZMP, on the basis that the environmental mitigation measures represented in the consistency determination (and incorporated into this EA) are fully implemented.</p>	The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related impacts to coastal zone management would not occur. Conditions are not expected to change for the Affected Environment in Section 3.1.10 of the EA.
<b>Global Atmosphere</b>		
Greenhouse Gases and Global Warming	The Proposed Action would not induce a long-term addition to greenhouse gases (GHG) in the atmosphere. Under the Proposed Action, all construction activities combined would generate approximately 593 tons (537 metric tons) of carbon dioxide (CO <sub>2</sub> ), and operational activities	The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be

**Table 2-1. Comparison of Potential Environmental Consequences**

<b>Locations and Resources Affected</b>	<b>Proposed Action</b>	<b>No Action Alternative</b>
	would generate approximately 671 tons (609 metric tons) of CO <sub>2</sub> each year. The amount of CO <sub>2</sub> released by the Proposed Action would be less than 0.0001 percent of the anthropogenic emissions for this gas released on a global scale annually.	implemented; therefore, project related impacts on global warming would not occur. Conditions are not expected to change for the Affected Environment in Section 3.2.1 of the EA.
Stratospheric Ozone Layer	There would be no chlorofluorocarbons (CFCs) or other ozone depleting substances used or released during the Proposed Action. Therefore, the Proposed Action would have no effect on the stratosphere ozone layer.	The proposed construction and operation of the RBC Facility upgrade and the destruction of one of the legacy facilities would not be implemented; therefore, project related impacts on the stratospheric ozone layer would not occur. Conditions are not expected to change for the Affected Environment in Section 3.2.2 of the EA.

## 3.0 AFFECTED ENVIRONMENT

This chapter describes the environmental resources or topical areas that could potentially be affected by the Proposed Action. The information and data presented are commensurate with the importance of the potential impacts in order to provide the proper context for evaluating impacts. Sources of data used and cited in the preparation of this chapter include available literature (such as EAs, EISs, and other environmental studies), installation and facility personnel, and regulatory agencies.

The information contained in this chapter serves as the baseline against which the predicted effects of the Proposed Action can be compared. The potential environmental effects of the Proposed Action and No Action Alternative are discussed in Chapter 4.0.

### 3.1 KAENA POINT SATELLITE TRACKING STATION

KPSTS is located on the northwest tip of the island of Oahu, on a plateau above Kaena Point (Figure 1-1) and covers 153 acres (62 hectares) of land leased from the State of Hawaii. The Station consists of a series of facilities connected by an access road, extending approximately 2 mi (3 km) along a broad, high ridge known as Kuaokala Ridge. West and south of the Station, the Kuaokala Ridge drops sharply, approximately 1,000 ft (305 m) to the Pacific Ocean. North of the Station, the Kuaokala Ridge is dissected by several short, steep drainages. To the east of the Station, Kuaokala Ridge merges with the western end of the Waianae Mountain Range.

The areas beyond KPSTS are mostly unimproved forests and shrublands. The forests are maintained as state forest reserves and State of Hawaii game management areas. Recreational hunters and hikers use the State Lands by permit and are allowed to cross the Station to access the lands beyond KPSTS. The Kaena Point Natural Area Reserve is located at the shoreline of Kaena Point, about a mile west of the westernmost antenna of the KPSTS complex.

In conducting the antenna construction, operation, and demolition activities at KPSTS, air quality, noise, water resources, biological resources, cultural resources, safety and occupational health, hazardous materials and waste management (including pollution prevention), infrastructure, visual resources, and coastal zone management are the only areas of concern requiring discussion. No other environmental resource topics for the station are analyzed further for the following reasons: (1) the Proposed Action requires ground-disturbing activities only within the Station boundaries and mostly within pre-disturbed areas, thus no impacts to important soils or geologic resources would be expected; (2) there would be a limited number of temporary construction personnel on site and no increase in permanent USAF personnel, thus no socioeconomic concerns are anticipated; (3) given that proposed activities would have very little effect outside of the Station boundary, there would be no disproportionate impacts to minority populations and low-income populations under Executive Order 12898 (*Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*); (4) the Proposed Action would not require any changes to airspace usage; and (5) the proposed activities are consistent with designated land uses for the property. As a result, there would be no adverse effects on land use.

#### 3.1.1 AIR QUALITY

##### 3.1.1.1 National Ambient Air Quality Standards and Attainment Status

The US Environmental Protection Agency (USEPA) Region 9 and the Hawaii Department of Health (HDOH), regulate air quality in Hawaii. The Clean Air Act (CAA) (42 United States Code (USC) 7401-

7671q), as amended, gives the USEPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) that set acceptable concentration levels for seven criteria pollutants: fine particulate matter (PM<sub>10</sub>), very fine particles (PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), nitrous oxides (NO<sub>x</sub>), ozone, and lead. Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants that contribute to acute health effects, while long-term standards (annual averages) have been established for pollutants that contribute to chronic health effects. In addition, Hawaii has adopted standards stricter than those established under the Federal program (Table 3-1).

Air-Quality Control Regions (AQCRs) that exceed the NAAQS are designated *nonattainment* areas and those in accordance with the standards are *attainment* areas. The General Conformity Rule (40 CFR Part 51, Subpart W, and 40 CFR Part 93) ensures that the actions taken by Federal agencies in nonattainment and maintenance areas do not impede the state's ability to achieve the NAAQS in a timely fashion. The State of Hawaii and therefore all activities associated with the Proposed Action are within the State of Hawaii Air Quality Control Region (AQCR) 060 (40 CFR 81.76). USEPA has designated AQCR 060 as in attainment for all criteria pollutants (40 CFR 81.76). Because the project is in an attainment area, the air conformity regulations do not apply to the Proposed Action.

Because air quality is measured and regulated on a regional level, the Region of Influence (ROI) for the air quality analysis in this EA is AQCR 060, and those portions of Hawaii where the Proposed Action would occur. The HDOH monitors levels of criteria pollutants at representative sites in each region throughout Hawaii, and has two monitoring stations near KPSTS, Pearl City and Ewa Beach. For these two stations, Table 3-1 includes the monitored concentrations of CO, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> for three prior years. No other criteria pollutants are monitored at these locations. Notably, all monitored values are below both the state and Federal air quality standards; hence the attainment status.

### **3.1.1.2 Regulatory Requirements and Existing Emissions**

The primary sources of air emissions at KPSTS are the power plant, an on-site gasoline fueling station, and fugitive emissions from various refrigeration units. KPSTS operates under a Synthetic Minor Operating Permit from HDOH (permit number 0614-01-N) which sets a Federally enforceable limitation allowing existing generators to consume up to 100,000 gallons (378,000 liters) of diesel annually on a rolling 12-month basis. Table 3-2 outlines the total actual emissions of criteria pollutants and hazardous air pollutants (HAPs) at KPSTS in 2007. In addition, an Air Quality Management Plan (EA Engineering, Science, and Technology [EAEST], 2006) is in place to assist KPSTS in managing its air quality program that incorporates compliance planning requirements and provides air emission mitigation strategies for the Station (KPSTS, 2008).

## **3.1.2 NOISE**

### **3.1.2.1 Noise Basics and Regulatory Overview**

Noise is most often defined as unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. Sources of noise may be transient (e.g., a passing train or aircraft), continuous (e.g., heavy traffic or air conditioning equipment), or impulsive (e.g., a sonic boom or a pile driver). Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz (Hz) are used to quantify sound frequency. The human ear responds differently to different frequencies. Sound-pressure levels are often adjusted for certain frequency bands, which are referred to as weighted sound levels. A-weighted decibels (dBA)



Table 3-1. Air Quality Standards and Ambient Air Concentrations near Kaena Point, HI

Pollutant	2006		2007		2008		Hawaii Standards <sup>1</sup>	Federal Standards <sup>2</sup>	
	Pearl City	Ewa Beach	Pearl City	Ewa Beach	Pearl City	Ewa Beach		Primary <sup>3</sup>	Secondary <sup>4</sup>
<b>Carbon Monoxide (parts per million - ppm)</b>									
1-hour average	1.7	(no data)	3.8	(no data)	1.4	(no data)	9	35	None
8-hour average	1.1		0.8		0.7		4.4	9	
<b>Ozone (ppm)</b>									
8-hour highest <sup>5</sup>	(no data)	(no data)	(no data)	(no data)	(no data)	(no data)	0.075	0.075	Same as Primary Standard
8-hour 2 <sup>nd</sup> highest							-	-	
<b>SO<sub>2</sub> (ppm)</b>									
3-hour highest	0.009	0.023	0.010	0.031	0.010	0.012	0.50	-	0.50
3-hour 2 <sup>nd</sup> highest	0.008	0.021	0.008	0.027	0.009	0.012	-	-	-
24-hour highest	0.003	0.006	0.003	0.008	0.005	0.005	0.14	0.14	-
24-hour 2 <sup>nd</sup> highest	0.003	0.006	0.003	0.009	0.005	0.005	-	-	-
Annual Arithmetic Mean	0.002	0.002	0.002	0.002	0.001	0.001	0.03	0.03	-
<b>PM<sub>10</sub> (micrograms per cubic meter - µg/m<sup>3</sup>)</b>									
24-hour highest	59	87	75	57	61	55	150	150	Same as Primary Standard
24-hour 2 <sup>nd</sup> highest	58	64	57	45	44	52	-	-	
<b>PM<sub>2.5</sub> (µg/m<sup>3</sup>)</b>									
24-hour highest	33.9	9.2	20.1	9.2	34.6	25.8	-	35	Same as Primary Standard
24-hour 2 <sup>nd</sup> highest	9.3	8.9	8.2	7.7	29.5	17.3	-	-	
Annual Arithmetic Mean	3.76	3.5	3.48	3.64	5.39	4.79	15	15	

Notes:<sup>1</sup> Hawaii standards for sulfur dioxide are not to be exceeded values.<sup>2</sup> National averages (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year.

The ozone standard is attained when the expected number of days per calendar year, with a maximum hourly average concentration above the standard, is equal to or less than one.

<sup>3</sup> National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.<sup>4</sup> National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects from a pollutant.<sup>5</sup> Not to be exceeded by the 3-year average of the annual fourth highest daily maximum 8-hour average.

Sources: USEPA, 2010a; 40 CFR Part 50; 73 FR 16436-16514; HDOH, 2010.

**Table 3-2. Criteria Air Pollutant Emissions for KPSTS in 2007**  
**tons (metric tons)**

<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>NO<sub>x</sub></b>	<b>SO<sub>2</sub></b>	<b>CO</b>	<b>HAP</b>
0.08 (0.07)	0.08 (0.07)	1.48 (1.34)	0.01 (0.009)	0.35 (0.31)	0.01 (0.009)

Source: KPSTS, 2008.

approximate sound frequencies perceived by humans. Sounds encountered in daily life and their expected dBA levels are provided in Figure 3-1.

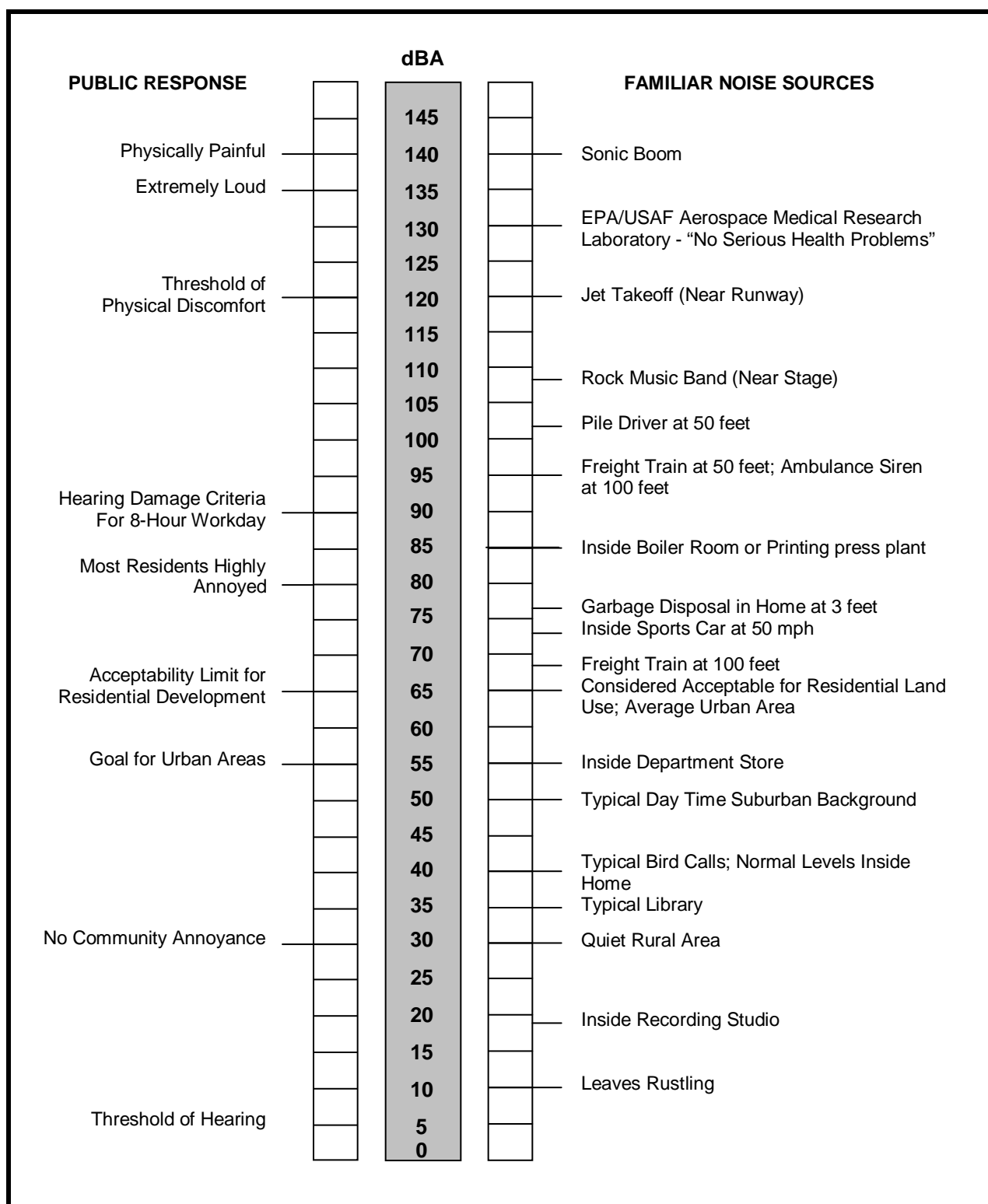
The dBA noise metric describes steady noise levels. Very few noises are, in fact, constant, so a noise metric day-night sound level (DNL) has been developed. DNL is defined as the average sound energy in a 24-hour period with a 10-dB penalty added to nighttime levels (10 PM to 7 AM). DNL is a useful descriptor for noise because it averages ongoing yet intermittent noise, and it measures total sound energy over a 24-hour period. In addition, equivalent sound level ( $L_{eq}$ ) is often used to describe the overall noise environment.  $L_{eq}$  is the average sound level in dB.

Air Force Occupational Safety and Health (AFOSH) Standard 48-20 (*Occupational Noise and Hearing Conservation Program*) describes the USAF Hearing Conservation Program procedures used at KPSTS. Similarly, under 29 CFR 1910.95 (*Occupational Noise Exposure*), employers are required to monitor employees whose exposure to noise could equal or exceed an 8-hour time-weighted average of 85 dBA. USAF standards require hearing protection whenever a person is exposed to steady-state noise of 85 dBA or more, or impulse noise of 140 dB sound pressure level or more, regardless of duration. Personal noise protection is required when using noise-hazardous machinery or entering hazardous noise areas.

The Noise Control Act of 1972 (Public Law 92-574) directs Federal agencies to comply with applicable Federal, state, interstate, and local noise control regulations. In 1974, the USEPA provided information suggesting that continuous and long-term noise levels in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses, such as residences, schools, churches, and hospitals. Hawaii Administrative Rules (HAR), Title 11, Chapter 46 (HAR 11-46) defines maximum permissible sound levels, and provides for the prevention, control, and abatement of noise pollution in the State from excessive noise sources, such as stationary noise sources, and equipment related to agricultural, construction, and industrial activities. In 2009, the HDOH Indoor Air and Radiological Health Branch issued a variance (Docket No. 08-NR-VN-28; V-512) for the KPSTS power plant to exceed regulatory limits on noise at the property line. Annual noise level monitoring and reporting are required. The County of Hawaii and the City of Honolulu do have noise ordinances that specifically exempt all activities of the local, state, and Federal government.

### 3.1.2.2 Existing Noise Environment

Existing sources of noise near the project site include helicopter take-offs and landings, heavy surf, aircraft overflights, and light industrial activities. The Coast Guard currently uses the helicopter landing pad to practice take-offs and landings. The primary sources of noise within the KPSTS boundary are the power plant's (Building 38) generators and HVAC systems at several other buildings. The generators typically run between 100-500 hours per year. KPSTS is approximately 2 mi (3 km) southwest of Dillingham Airfield, which is a regional general aviation airport with approximately 200 take-offs and landings each day (AirNav, 2010).



Source: Modified from US Army Strategic Defense Command, 1991

**Figure 3-1. Typical Noise Levels of Familiar Noise Sources and Public Responses**

For noise analysis purposes in this EA, the ROI at KPSTS is defined as those areas in proximity to the new antenna, helipad relocation, and the alternative legacy antennas proposed for demolition. Existing noise levels (DNL and  $L_{eq}$ ) were estimated for the project sites and surrounding areas using the techniques specified in the *American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present* (American National Standards Institute, 2003). The overall noise environment is comparable to a quiet rural area. There are no schools, churches, or hospitals within several miles of the proposed site. The existing noise environment (DNL < 55) would consist of no acoustical events that are either loud enough or frequent enough to interfere with communication or sleep. No existing residence or other sensitive receptors would be annoyed with the in situ noise (Federal Interagency Committee on Urban Noise, 1980). KPSTS submitted a Community Noise Variance Application for the new power plant, which was granted in 2009.

### **3.1.3 WATER RESOURCES**

The Hawaii Department of Land and Natural Resources (Hawaii DLNR) Division of Aquatic Resources has the responsibility to manage, conserve, and restore the State of Hawaii's unique aquatic resources and ecosystems.

At KPSTS, the region of influence (ROI) for water resources includes those local surface water features and groundwater that could be adversely affected by HTS support facilities or activities (e.g., drainage alteration or water quality degradation). For a discussion on water supply and waste water management at KPSTS, refer to Section 3.1.8.1 (Utilities).

#### **3.1.3.1 Surface Water**

No permanent surface water bodies exist on KPSTS. Ephemeral surface water in the vicinity of the installation is occasionally observed during the winter months after heavy rains. Runoff drains to the north and south in intermittent streams that cascade down the steep slopes. (USAF, 2003)

#### **3.1.3.2 Groundwater**

KPSTS straddles two aquifer sector-systems: the North-Mokuleia System and the Waianae-Keaau System. The North-Mokuleia System is an unconfined high level aquifer, while the Waianae-Keaau System is an unconfined basal aquifer. Basal groundwater at KPSTS is approximately 14 ft (4 m) above mean sea level. Perched groundwater zones in this region are possible, but are believed to be infrequent. (USAF, 2003)

#### **3.1.3.3 Storm Water Management**

Polluted runoff has been addressed in Hawaii by a statewide approach based on land use sectors. The HDOH and the Office of Planning are the responsible agents that coordinate the statewide nonpoint source program. HDOH has established the Polluted Runoff Control program and Hawaii's coastal Nonpoint Pollution Control Program Management Plan. Agriculture and urbanization are the two main land use sectors that contribute the greatest amount of human induced polluted runoff. The state has supported numerous BMPs to control polluted runoff (Hawaii Department of Business, Economic Development, and Tourism [Hawaii DBEDT] and HDOH, 2000).

KPSTS is located on a ridge that drains into several watersheds. In 2005, HDOH issued KPSTS a Storm Water Notice of General Permit Coverage (NGPC). As required by the NGPC, KPSTS prepared a Storm

Water Management Plan (SWMP), which was accepted by HDOH (Innovative Technical Solutions, Inc. [ITSI], 2005).

For construction activities, contractors are required to conform to 40 CFR Parts 122, 123, and 124; and HAR, Title 11, Chapter 55 (HAR 11-55) regarding the control of runoff from the construction site.

KPSTS requires the use of BMPs for erosion and sediment control during construction, and for handling waste materials. Examples of BMPs that may be used for erosion and sediment control include silt fences, rock berms, erosion control mats, and swales (ITSI, 2005).

### **3.1.4 BIOLOGICAL RESOURCES**

This section describes the existing vegetation and wildlife, including protected species and habitats, occurring at KPSTS. For purposes of analyzing biological resources, this EA limits the ROI to areas in the vicinity of the proposed HTS support facilities, buildings, and operations.

#### **3.1.4.1 Vegetation**

The managed grounds surrounding the facilities at KPSTS are developed and landscaped. Beyond these areas, the land is largely unmanaged and is composed of five major cover types: koa-haole shrub land, ironwood/silkwood forest, mixed grass/koa-haole mosaic, mixed shrub land, and barren ground (EAEST, 1996). The vegetative cover types present at KPSTS have been classified as Mixed Rangeland with Commercial and Services land uses.

#### **3.1.4.2 Wildlife**

Wildlife species present at KPSTS and the adjacent game lands are typical of the region. Both native and non-native wildlife species are present. Species known to occur on or adjacent to KPSTS include the White-Tailed Tropicbird, Spotted or Lace-Necked Dove, Northern Mockingbird, Japanese White-Eye, Feral Pig, and Hawaiian Hoary Bat (EAEST, 1996).

The Migratory Bird Treaty Act of 1918 (16 USC 703, et seq., as amended) protects migratory birds and their parts (eggs, nest, feathers). The State of Hawaii Revised Statutes 195D provides for the conservation of aquatic life, wildlife, and land plants including migratory birds. As a DoD installation, KPSTS abides by the Memorandum of Understanding, executed July 2006, between the DoD and the US Fish and Wildlife Service (USFWS) to promote the Conservation of Migratory Birds. KPSTS itself consists predominantly of developed areas that are surrounded by bird habitat. The terrain immediately surrounding KPSTS consists of habitat suitable for migratory birds to nest and take refuge.

KPSTS continually coordinates with and provides access for Hawaii DLNR personnel, as the State of Hawaii owns and manages the surrounding lands. KPSTS has developed and maintains an Integrated Natural Resources Management Plan (INRMP) (KPSTS, 2009). INRMP component plans include Invasive Plant Species Control Plan, Wildland Fire Management Plan (WFMP), and Pest Management Plan (PMP). The Invasive Species Plan provides field data including types and locations for known invasive species at KPSTS, and recommendations for controlling each species. The WFMP provides a description of KPSTS's wildland fire defensive measures and its resources that would support firefighters when brushfire impacts the surrounding areas. The PMP provides for the safe, effective, economical, and environmentally acceptable management of pests. Pest management techniques that have the lowest chance of impacting wildlife are chosen.



### 3.1.4.3 Threatened and Endangered Species

According to a representative at the USFWS Pacific Islands Fish and Wildlife Office in Honolulu, there are no records of Federally-listed or proposed threatened or endangered species, or designated or proposed critical habitats, occurring within the proposed project areas at KPSTS (USFWS, 2010). Although Federally-listed species may occur outside of KPSTS, such as the endangered Hawaiian Hoary bat (*Lasiurus cinereus semotus*) (Higginbotham, Briggs & Associates, 1993), KPSTS personnel are aware of the potential for such species and have management plans in place to minimize impacts on adjacent habitats.

### 3.1.5 CULTURAL RESOURCES

Cultural resources include prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason. Cultural resources are limited, nonrenewable resources whose potential for scientific research (or value as a traditional resource) may be easily diminished by actions impacting their integrity.

Numerous laws and regulations require that possible effects to cultural resources be considered during the planning and execution of Federal undertakings. These laws and regulations stipulate a process of compliance and consultation, define the responsibilities of the Federal agency proposing the action, and prescribe the relationship among other involved agencies (e.g., State Historic Preservation Officer [SHPO] and the Advisory Council on Historic Preservation). In addition to NEPA, the primary laws that pertain to the treatment of cultural resources during environmental analysis are the National Historic Preservation Act (especially Sections 106 and 110), the Archaeological Resources Protection Act (ARPA), the Antiquities Act of 1906, the American Indian Religious Freedom Act, and the Native American Graves Protection and Repatriation Act (NAGPRA). Depending on the integrity and historical significance of a site or property, it may be listed or eligible for listing on the National Register of Historic Places (NRHP). The State of Hawaii's Revised Statutes, through the SHPD, also regulates potential impacts to historic resources.

In general, the ROI<sup>1</sup> for cultural resources encompasses areas requiring ground disturbance (e.g., construction for the HTS), off-road operations, or are in proximity of Proposed Action facilities and buildings. For ease of discussion, cultural resources have been divided into historic buildings and structures, archaeological resources (prehistoric and historic), and Traditional Cultural Properties (e.g., Native Hawaiian sacred sites).

#### 3.1.5.1 Historic Buildings and Structures

KPSTS is one of three US satellite tracking and communications stations established for the military space program in the late 1950s. According to the 2008 KPSTS Integrated Cultural Resources Management Plan (ICRMP), eight facilities were identified as possible NRHP-eligible Cold War cultural resources (Tomonari-Tuggle, 2008). Building 39005 (Alternative 1 for demolition) was identified as one of the possible Cold War historic structures.

Building 39005 is a large radome built in 1968 (Figure 3-2) that is associated with the KPSTS satellite tracking mission begun in the early 1960s and therefore could have significance related to Cold War activities. Building 39006 (Alternative 2 for demolition) is a smaller radome built in 1972 (Figure 3-3).

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<sup>1</sup> The term ROI is synonymous with the "area of potential effect" as defined under cultural resources regulations, 36 CFR 800.16(d).



**Figure 3-2. Photograph of Building 39005**



**Figure 3-3. Photograph of Building 39006**

This facility was not identified in the 2008 KPSTS ICRMP; however, it is also associated with KPSTS' Cold War-era mission.

### **3.1.5.2 Archaeological Resources**

Archaeological sites have been documented at KPSTS during previous archaeological surveys. As part of this project, portions of KPSTS were surveyed by Garcia and Associates to determine the presence and condition of cultural resources in the vicinity of the Proposed Action. No archaeological sites of

significance were found to be located within the proposed construction and demolition areas (Garcia and Associates, 2010).

### 3.1.5.3 Traditional Cultural Properties

Significant traditional cultural properties (TCPs) are subject to the same regulations as other types of historic properties and are afforded the same protection. Traditional resources for Native Hawaiians can include archaeological sites, burial sites, ceremonial areas, plant gathering areas, or any other natural area important to a culture for religious or heritage reasons.

Kaena Point is particularly well known as a Hawaiian *leina a ka 'uhane*, or 'leaping place of the spirit.' This cultural use, however, is traditionally understood to have occurred at the westernmost tip of Oahu Island, several kilometers from the Proposed Action areas. Although the ahupua'a of Kaena and Keawaula are rich in traditional history, there are no known TCPs within the proposed construction and demolition areas (Garcia and Associates, 2010).

### 3.1.6 SAFETY AND OCCUPATIONAL HEALTH

Safety and occupational health includes consideration of any activities, occurrences, or operations that have the potential to affect the well-being, safety, or health of workers or members of the general public. The primary goal is to identify and prevent accidents or impacts to onsite workers and the general public. Regarding health and safety at KPSTS, the ROI is limited to the existing station facilities supporting the HTS program. The safety and health ROI includes station personnel, contractors, and the general public.

For the Proposed Action, safety and health risks exist primarily due to the potential for accidents occurring during transportation, construction activities, and facility operations. Typical hazards and accidents can include the following:

- Fires
- Electrical shock or burns
- Non-ionizing radio frequency (RF) radiation from communication antennas
- Inhalation or dermal exposure to hazardous materials or waste
- Asphyxiation from inert atmospheric conditions
- Spills of chemicals and fuels
- Falling debris related to construction
- Falls from structures
- Accidents related to earth-moving equipment, power tools, and other machinery
- Transportation accidents (air and land)

To help ensure the safe conduct of operations at KPSTS and other bases, the USAF has developed policies and procedures for implementing safety and health requirements. Air Force Policy Directive 91-2 (*Safety Programs*) establishes the USAF's key safety policies and also describes success-oriented feedback and performance metrics to measure policy implementation. More specific safety and safety-related DoD and USAF requirements, procedures, and standards relevant to the Proposed Action are listed below.

- Air Force Instruction (AFI) 91-202, AFSPC Supplement 1 (*The US Air Force Mishap Prevention Program*) implements the USAF's Safety Program for determining and applying standards to help eliminate unsafe acts or conditions that cause mishaps.

- AFI 91-204 (*Safety Investigations and Reports*) provides guidance that is common to investigating and reporting all USAF mishaps.
- AFI 91-301, AFSPC Supplement 1 (*Air Force Occupational and Environmental Safety, Fire Protection, and Health*) summarizes USAF requirements for the protection of safety and health. Safety and health hazards are to be minimized through appropriate engineering controls, personal protective equipment, and administrative procedures.
- AFOSH Standard 48-9 (*Radio Frequency Radiation Safety Program*) specifies RF radiation safety requirements and identifies permissible exposure limits (PELs).<sup>2</sup>

HTS contractors working on KPSTS are required to follow applicable Occupational Safety and Health Administration (OSHA) regulatory requirements (29 CFR), except when DoD or USAF-specific requirements apply. Implementation of these regulatory requirements and procedures ensure that there is minimal risk to the health and safety of installation personnel and contractors, as well as to the general public, from installation operations.

KPSTS does not have its own fire department. The Station relies on the Honolulu Fire Department and the Federal Fire Department at Lualualei for fire and medical response.

### **3.1.7 HAZARDOUS MATERIALS AND WASTE MANAGEMENT**

For the analysis of hazardous materials and waste management at KPSTS, the ROI is defined as those project facilities that: (1) store and handle hazardous materials; (2) collect, store (on a short-term basis), and ship hazardous waste; and (3) are in proximity to environmental restoration sites that were previously contaminated.

Hazardous materials and hazardous wastes at KPSTS are managed in accordance with applicable Federal, state, and local regulations. Based on the limited quantities of hazardous waste generated at KPSTS, typically less than 20 pounds (9 kilograms) per month, the Station is defined as a “Conditionally Exempt Small Quantity Generator” by the Resource Conservation and Recovery Act (40 CFR 261.5(a)). These wastes include expired shelf-life materials, materials in damaged containers, waste paints and associated materials, waste diesel and gasoline fuels, flammable materials (such as mineral spirits), absorbents, filters, and adhesives.

There are no Installation Restoration Program Sites in proximity to the Proposed Action areas.

### **3.1.8 INFRASTRUCTURE**

This section describes the existing utilities at KPSTS and local transportation access. For purposes of analyzing infrastructure, this EA limits the ROI to areas in the vicinity of KPSTS.

#### **3.1.8.1 Utilities**

Electricity at KPSTS is supplied by commercial providers as well as through the Station’s power plant. The Station relies on commercially provided electricity for its daily functioning while reserving use of its

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<sup>2</sup> The PEL is the exposure value to which an individual may be exposed to RF radiation without exhibiting damaging biological effects.

diesel generator driven power plant for periods of power outage and as emergency backup to ensure continuous power during mission critical exercises.

Water at KPSTS is provided through the Dillingham waterline, which is used for all industrial, sanitary, and fire suppression uses. The Station currently relies on bottled water for human consumption. A project to upgrade the water distribution system is in progress, and is expected to be completed in 2011. The existing onsite deep well (ID No. 3314-03) is being evaluated for restoration as the primary water supply and is currently undergoing repairs. It is anticipated that appropriate water quality standards will be reestablished through the distribution system upgrades.

Wastewater at KPSTS is handled through the use of a number of individual cesspools and septic tanks. The Station is not connected to a municipal sewer system.

### **3.1.8.2 Transportation**

KPSTS is at the end of Satellite Tracking Station Road. Passenger vehicle access to the station is through the main gate at the terminus of Farrington Highway (Route 93). Several facilities are along this road and it ends at the edge of the Kaena Point State Park. Entrance to the main gate of Satellite Tracking Station Road is not directly accessible from the east side of the island.

Transportation in and around the station is accomplished in personal vehicles on a series of access roads with all staff and permanent personnel commuting to and from the station. Access through the station is also provided for licensed hunters and state-permitted recreational users.

### **3.1.9 VISUAL RESOURCES**

Kaena Point, the western most point on Oahu, is the site of one of the last intact dune ecosystems in the main Hawaiian Islands (Hawaii DLNR, 2010). The Kaena Point Natural Area reserve is covered with wind-swept dunes, a string of shoreline rocks, sparse vegetation, and a beacon. The volcanic coastline includes tide pools, sea caves, natural arches, and blowholes. Because of its lack of development, diverse terrain, and scenic views, Kaena Point is a popular destination of both tourists and locals, providing opportunities for hiking, hunting, fishing, swimming, and surfing.

The large radomes at KPSTS, which are visible from the coastal areas and offshore, are locally known as the “golf balls” and are a popular landmark for fishing vessels in the surrounding ocean waters. Thus, the ROI for visual resources includes the coastal areas below Kuaokala Ridge.

### **3.1.10 COASTAL ZONE MANAGEMENT**

The Coastal Zone Management Act (CZMA) of 1972 (16 USC 1451, et seq., as amended) encourages states to protect, preserve, develop, and when possible, restore or enhance valuable natural coastal resources. The State of Hawaii enacted the HCZMP in 1977 (Chapter 205A, Hawaii Revised Statutes). Ten regulatory policies comprise the HCZMP: Coastal Ecosystems, Coastal Hazards, Beach Protection, Marine Resources, Recreational Resources, Historic Resources, Scenic and Open Space Resources, Economic Uses, Managing Development, and Public Participation. Because the entire state of Hawaii is within the Coastal Zone, all Proposed Action areas at KPSTS are within the ROI.

As previously described, KPSTS is located on lands leased from the State of Hawaii. The steep slopes immediately south of KPSTS and Kuaokala Ridge are State park lands. The areas immediately north of KPSTS and Kuaokala Ridge are mostly unimproved forests and shrublands within the State’s Kuaokala Forest Reserve and Kuaokala Game Management Area. These areas are used by hunters, hikers, and



campers. No recreational areas are present on KPSTS. As part of the lease agreement with the State, the USAF must allow public access to the State lands from Farrington Highway (Route 93) through the Station access road. A permit issued by the State is required for individuals using the access road.

## **3.2 GLOBAL ATMOSPHERE**

In addition to actions at KPSTS, this EA also considers global environmental effects, including the global atmosphere, in accordance with the requirements of Executive Order 12114. This section describes the baseline conditions that may be affected by the Proposed Action.

### **3.2.1 GREENHOUSE GASES AND GLOBAL WARMING**

Greenhouse gases (GHG) are components of the atmosphere that contribute to the greenhouse effect and global warming. GHGs may occur naturally in the atmosphere or result from human activities, such as the burning of fossil fuels. Federal agencies, states, and local communities address global warming by preparing GHG inventories and adopting policies that will result in a decrease of GHG emissions produced by humans. According to the Kyoto Protocol, there are six GHGs: carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (United Nations Framework Convention on Climate Change, 2007). Although some GHG (CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O) occur naturally in the atmosphere, human activities have changed GHG atmospheric concentrations. From the pre-industrial era (i.e., ending about 1750) to 2004, concentrations of CO<sub>2</sub> have increased globally by 35 percent. Within the US, fuel combustion accounted for 94 percent of all CO<sub>2</sub> emissions released in 2005. On a global scale, fossil fuel combustion added approximately 30 x 10<sup>9</sup> tons (27 x 10<sup>9</sup> metric tons) of CO<sub>2</sub> to the atmosphere in 2004, of which the US accounted for about 22 percent (USEPA, 2007).

Since 1900, the Earth's average surface air temperature has increased by about 1.2° to 1.4° F (0.7° to 0.8° C). The warmest global average temperatures on record have all occurred within the past 15 years, with the warmest two (2) years being 1998 and 2005 (USEPA, 2010b). Consequently, the USAF is supporting climate-change initiatives globally, while preserving military operations, sustainability, and readiness by working, where possible, to reduce GHG emissions.

### **3.2.2 STRATOSPHERIC OZONE LAYER**

The stratosphere, which extends from 32,800 feet to approximately 164,000 feet in altitude, contains the Earth's ozone layer (National Oceanic and Atmospheric Administration [NOAA], 2007). The ozone layer plays a vital role in absorbing harmful ultraviolet radiation from the sun. Over the last 20 years, ozone concentrations in the stratosphere have been threatened by anthropogenic (human-made) gases released into the atmosphere—primarily chlorine related substances. Such materials include chlorofluorocarbons (CFCs), which have been widely used in electronics and refrigeration systems, and the lesser-used halons, which are effective fire extinguishing agents. Once released, the dynamics of the atmosphere mix the gases worldwide until they reach the stratosphere, where ultraviolet radiation releases their chlorine and bromine components.

Through global compliance with the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and amendments, the worldwide production of CFCs and other ozone-depleting substances has been drastically reduced and banned in many countries. A continuation of these compliance efforts is expected to allow for a slow recovery of the ozone layer (WMO, 2006).

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## 4.0 ENVIRONMENTAL CONSEQUENCES

This chapter presents the potential environmental consequences of the Proposed Action and No Action Alternative, described in Chapter 2.0 of this EA, when compared to the affected environment described in Chapter 3.0. The amount of detail presented in each section of the analysis is proportional to the potential for impact. The discussions address both *direct* and *indirect* impacts,<sup>3</sup> where applicable, in addition to any *cumulative* effects that might occur. Also included in the discussions, where necessary, are appropriate environmental monitoring and management actions and requirements, which are summarized in Section 4.3.

Chapter 6.0 lists the agencies, organizations, and personnel consulted as part of this analysis.

### 4.1 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

The following sections describe the potential environmental consequences of implementing the Proposed Action. For each environmental resource or topical area, impacts are described that potentially could be affected by HTS A-Side RBC antenna activities at KPSTS and within the global environment.

#### 4.1.1 Kaena Point Satellite Tracking Station

Various management controls and engineering systems are in place at KPSTS to manage and implement environmental and safety requirements. Required by Federal, state, DoD, and agency-specific regulations, these measures are implemented through normal operating procedures. To help ensure that procedures are followed, installation personnel and contractors receive periodic training on applicable environmental and safety requirements. In addition, environmental audits by both internal offices and external agencies are conducted at the station to verify compliance.

##### 4.1.1.1 Air Quality

###### 4.1.1.1.1 Facility Construction and Demolition

The entire state of Hawaii is classified as an attainment area and as such, the Proposed Action at KPSTS does not fall under the General Conformity Rule. Although the conformity regulations do not apply, the total direct and indirect emissions associated with the Proposed Action were estimated and compared to the *de minimis* thresholds to determine the level of effects under NEPA. This comparison is presented in Table 4-1. Detailed air emissions calculations for the Proposed Action are provided in Appendix B. The following sources of construction-related air emissions were accounted for:

- Construction/Demolition (including fugitive dust, equipment exhaust, workers commutes, the use of adhesives, and paving)
- Delivery of equipment and supplies

Because the estimated emissions would be *de minimis*, these effects would be minor. Emissions outlined herein represent conservative estimations of the types of equipment to be used and the duration of

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<sup>3</sup> *Direct* impacts are caused by the action and occur at the same time and place. *Indirect* impacts occur later in time or are farther removed in distance, but are still reasonably foreseeable.

**Table 4-1. Estimated Emissions of Criteria Pollutants for the Proposed Action at KPSTS**

Activity/Source	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Total Construction/Demolition Emissions (tons)	5.57	6.93	1.19	<0.01	0.84	0.43
Total Operational Emissions (tons per year)	0.03	0.14	0.01	<0.01	<0.01	<0.01
<b>De Minimis Thresholds (tons per year)</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Exceeds De Minimis Threshold</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

activities, and can be considered the upper-bound for the Proposed Action. In addition, all activities associated with the proposed facility construction and demolition would be accomplished in full compliance with other (non-permitting) regulatory requirements through the use of standard best management practices and/or products. For the control of fugitive dust, for example, construction/demolition areas can be wetted periodically and roads can be swept of dust and silt loadings. Construction activities would be in strict accordance with Hawaii Administrative Regulations (HAR), and all Federal emissions and performance laws and standards.

#### **4.1.1.1.2 Operations**

The proposed antenna would have a 50 kW standby generator to provide power for the radome blower package in the event site power is lost. A review of the site's existing Synthetic Minor Operating permit would be conducted and an HDOH Minor Operating permit for any new stationary sources of air emissions (e.g., generators) would be obtained if necessary. Short-term minor and long-term negligible effects would be expected. The total direct and indirect emissions from the Proposed Action (Table 4-1) would be *de minimis* (of minimal importance), not be regionally significant, and not contribute to a violation of KPSTS's air operating permit or any air regulation.

#### **4.1.1.2 Noise**

##### **4.1.1.2.1 Facility Construction and Demolition**

Short- and long-term minor adverse impact would be expected. Impacts would be related to construction activities and the maintenance and operation of the antenna's backup generator.

Individual pieces of construction equipment typically generate short-term noise levels of 80 to 90 dBA at a distance of 50 ft (15 m) (USEPA, 1974). With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within a few hundred feet of the construction site. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 ft (122 to 244 m) from the site of major equipment operations. However, there are no residences or other sensitive receptors within a mile of the site; therefore, these effects would be negligible. Noise may be audible but not annoying. Proposed construction and demolition activities would comply with HAR 11-46. Because KPSTS borders state park lands, an HDOH Noise Variance application would be submitted for the proposed construction and demolition activities, as necessary.

Personnel in the immediate vicinity of construction activities where noise levels approach 70 dB would utilize proper ear protection to protect their hearing. Construction workers and base personnel would comply with the USAF Hearing Conservation Program requirements (as described in Section 3.1.2) and other applicable occupational health and safety regulations.

#### **4.1.1.2.2      *Operations***

Because of the continuous operation of the electric-powered inflatable blower package, hearing protection would be required for personnel at all times while inside the radome. In accordance with the AFOSH Standard 48-20, KPSTS personnel would monitor facility noise levels inside the radome and determine appropriated hearing protection equipment.

The emergency generators for the antenna would be operated weekly for testing and maintenance. This operation would result temporarily in elevated noise associated with the operation of the Proposed Action. Areas not in close proximity to the antenna during these testing and maintenance operations would not exceed noise levels currently experienced at KPSTS. In compliance with HAR 11-46, an HDOH Noise Variance application would be submitted for the emergency generator, as necessary.

Operations would not generate disruptive noise levels for any sensitive receptors or for any off-station areas. Most operations would occur within enclosed facilities. The implementation of the Proposed Action would not increase local roadway traffic. These activities would be similar when compared to current on-base activities, and would not appreciably change the current noise environment. As a result, the Proposed Action would is not expected to cause significant noise impacts.

#### **4.1.1.3      *Water Resources***

##### **4.1.1.3.1      *Facility Construction and Demolition***

The Proposed Action would include the installation of a trench between Building 10 and the location for the radome facility. This trench would house communication cables. The Proposed Action would require 350 linear feet of trench. Groundwater withdrawals may be increased temporarily during construction and demolition-related activities (e.g., fugitive dust control).

To prevent polluted runoff during construction/demolition activities, runoff from the project sites would be controlled by BMPs, (e.g., construction of diversion ditches, benches, and berms to divert runoff to protected drainage courses,) and measures required by the project HDOH Notice of Intent and Storm Water Management Plan, as well as the KPSTS Storm Water Management Plan. In addition, a dewatering pond would be installed and maintained during the construction phase to capture storm water collected in open excavations. Upon project completion, the pond would be restored to natural cover in accordance with site seeding requirements. The contractor would be responsible for maintaining the basin in accordance with the requirements set forth in the civil construction specifications/requirements prepared by KPSTS. Management requirements for the dewatering pond have also been included in the project Environmental Protection Plan (EPP). A proper hydraulic outlet would be incorporated into the design in order to achieve the desired performance of the dewatering pond. The water quality outlet would be designed to drain the pond within 24 to 72 hours, or the drawdown time. The 24-hour limit would provide adequate settling time, while the 72-hour limit mitigates vector control concerns.

The total area of ground disturbance associated with the new antenna and relocation of the helipad would be around 1 acre (0.4 hectare). This ground disturbance includes all areas to be trenched for the IFL cable trough, utilities, equipment staging areas, temporary roadways, and the location of both anemometer towers. Demolition of one of the two alternative legacy antennas could disturb an additional 0.3 acres (0.12 hectares). Because the Proposed Action would impact more than 1 acre (0.4 hectare) overall, the contractor would be required to obtain an HDOH storm water construction permit as required under HAR 11-55.

Storm water impacts associated with the Proposed Action would be related to construction and thus would be temporary. The storm water detention basin would be restored to natural cover per site seeding requirements upon project completion. Management requirements for the storm water detention basin have also been included in the project Environmental Protection Plan.

With the implementation of the identified mitigation measures, no construction-related impacts to water resources are expected.

#### **4.1.1.3.2      *Operations***

There are no watercourses within KPSTS boundaries. Implementation of the Proposed Action would not affect the surface water resources of the region.

There would be no negative impacts to groundwater associated with the construction or the operation of the new antenna facility. No long-term impacts would result from operation of the Proposed Action.

#### **4.1.1.4      *Biological Resources***

##### **4.1.1.4.1      *Facility Construction and Demolition***

The vast majority of activities associated with the Proposed Action occur in previously disturbed lands, including roads, parking lots, and other paved and landscaped areas. As such, grasses associated with landscaped areas would be the most common type of vegetation impacted by these activities. The relocation of the helipad for the Proposed Action would impact approximately 0.6 acre (0.2 hectare) of a previously disturbed area dominated by invasive woody plant species.

There are no records of Federally-listed or proposed threatened or endangered species, or designated or proposed critical habitats occurring at KPSTS. Thus implementation of the Proposed Action is unlikely to impact threatened or endangered species.

##### **4.1.1.4.2      *Operations***

During long-term operations of the new antenna facility, continuous or occasional noise from the EG would potentially disturb wildlife in adjacent habitat areas. However, wildlife typically habituates to such noises in a relatively short period of time (Larkin, 1996; Mancini et al., 1988).

Just as for other satellite tracking antennas at KPSTS, the continuous operation of the new antenna would potentially expose migratory bird and bat species to RF radiation. On the basis of conservative assumptions regarding bird and bat weights, cross-sectional areas, and flight speed, and the antenna's narrow pencil-beam pattern, a flying bird or bat would not be harmed by RF radiation as it crossed the beam of an operating antenna (USAF, 1995).

Because the Proposed Action is located more than 0.5 mi (0.8 km) from the nearest coastline and approximately 1,300 ft (396 m) above sea level, facility lighting is not likely to pose a problem for sea turtles, and sea and shore birds. Lighting to be used for the antenna facility would be similar to existing systems used throughout KPSTS and should not be a source of additional light emissions, given the eventual decommissioning and demolition of one of the legacy antennas as part of the Proposed Action.

Although no Federally listed species or critical habitats have been identified within the proposed project areas, KPSTS has environmental management plans (see Section 3.1.4.2) in place to minimize adverse

effects on vegetation and wildlife occurring within the Station and in adjacent lands. As a result, no significant impacts to biological resources are expected from antenna-related operations.

#### 4.1.1.5 Cultural Resources

In November 2010, the KPSTS initiated a National Historic Preservation Act Section 106 consultation with the Hawaii SHPD and several Native Hawaiian Organizations. The SHPD and each organization were requested to review the proposed project and the potential effects on historical, archaeological, and native Hawaiian traditional resources.

In their written response to the consultation request, the Hawaii SHPD concurred with KPSTS's finding that the project would have "no adverse effect" on historic properties (see Appendix A, page A-2). The SHPD added, however, that in the event historic resources (including human skeletal remains, lava tubes, and lava blisters/bubbles) are identified during construction activities, all work should cease in the vicinity of the find, the find should be protected from additional disturbance, and the SHPD should be contacted immediately. The USAF has agreed to this request, which is elaborated further in Section 4.1.1.5.1.

Representatives from each of the following Native Hawaiian Organizations also responded to the consultation request. Records for each of the written, verbal, or other electronic responses received are referenced in Chapter 5.0 or are reproduced in Appendix A.

- Hui Malama I Na Kupuna O Hawaii Nei (2010)
- Hui Malama O Makua (2010)
- Kawaihapai Ohana (2010)
- Koa Mana (2010)
- Office of Hawaiian Affairs (Appendix A, page A-3)
- Pacific Justice and Reconciliation Center (Appendix A, pages A-4 and A-5)
- Royal Order of Kamehameha (2010)

All seven of the above organizations concurred with or gave no objection to the undertaking and determination of "no adverse effect". In three of the responses, however, additional comments were provided and are discussed below.

- Mr. Shad Kane, a representative of the Royal Order of Kamehameha (2010), noted his concurrence with the project so long as it is within the footprint of the area that is already occupied by the USAF. As described earlier in the EA, the Proposed Action would occur within the current boundaries of KPSTS.
- Mr. William Aila of the Hui Malama I Na Kupuna O Hawaii Nei (2010) also concurred with the project, but with the following condition: A traditional Hawaiian blessing ceremony is strongly recommended prior to the commencement of the project, that is, before construction begins. The blessing ceremony is an opportunity for cleansing and for protection of the people who live and work nearby. Mr. Aila asserts that the blessing is appropriate and necessary, as Kaena Point and the KPSTS are part of an important Hawaiian cultural landscape. Kaena Point is part of the traditional trail to the area below the Point, which holds the leina a ka `uhane (Spirit Leap), considered to be a wahi pana, a celebrated legendary place.

The USAF has agreed to Mr. Aila's request. Prior to initiating construction, KPSTS personnel would contact the appropriate Native Hawaiian Organization(s) or individual(s) to coordinate the blessing ceremony.

- To investigate for potential subsurface historic human remains, Dr. Kahu Kaleo Patterson of Pacific Justice and Reconciliation Center (Appendix A, page A-4) suggested that the USAF utilize human remains detection dogs and/or ground penetrating radar (GPR) prior to initiating ground disturbance activities. In later correspondence, Dr. Patterson noted that, even in areas previously disturbed or paved, that cultural layers and iwi kupuna (ancestral remains) can sometimes be preserved in place, or can be buried at deeper depths or in adjacent areas (Appendix A, page A-5).

Surveys conducted by Garcia and Associates (2010), however, have shown that the project area is not likely to contain historic human remains or other archaeological resources of significance. Also, considering that most of the project area has been previously disturbed, there is a very low probability for the project area to contain intact subsurface archaeological deposits. As described in the following section, KPSTS would require that the construction contractor provide continuous archaeological resource monitoring during all ground-disturbing activities. If evidence of archaeological materials or human remains were to be found during excavations, the USAF would consider use of detection dogs or GPR for subsurface investigations associated with the Proposed Action.

#### **4.1.1.5.1 Facility Construction and Demolition**

Based on surveys conducted by Garcia and Associates (2010), the site of the Proposed Action contains no surficial traditional Hawaiian cultural resources and, given the degree of previous landscape modification and construction, have a very low probability for containing intact subsurface archaeological deposits. The construction contractor would provide continuous archaeological resource monitoring during all ground-disturbing activities. If human remains or other archaeological materials are inadvertently discovered during ground disturbance, work in the vicinity of the discovery would stop and the contractors and KPSTS personnel would take measures to help secure any remains, archaeological materials, and associated context. If the remains are determined likely to be of native Hawaiian origin, the Office of Hawaiian Affairs, the Oahu Island Burial Council, Hui Malama I Na Kupuna O Hawaii Nei, and interested parties will be notified and requested to consult in accordance with the Native American Graves Protection and Repatriation Act. Similarly, if any archaeological or other historic resources (including lava tubes and lava blisters/bubbles) are inadvertently discovered, work in vicinity would stop and the SHPD would be notified immediately. All mitigating steps taken would be conducted in accordance with the KPSTS ICRMP (Tomonari-Tuggle, 2008).

Although the proposed project includes the demolition of a possible Cold War-era antenna facility, the two alternative antenna facilities considered for demolition (Buildings 39005 and 39006) are less than 43 years old and are similar to other existing USAF satellite tracking assets. Thus, the USAF considers the two facilities to be ineligible for listing on the NRHP and the demolition of either of the facilities to have "no adverse effect" on historic properties. Although "no adverse effects" are expected, KPSTS would mitigate the effects of demolishing a possible Cold War-era antenna facility by compiling a facility record consisting of original design plans, photographs, and a brief discussion on the facility's history.

By implementing the measures described above, no significant impacts to cultural resources are expected.



#### **4.1.1.5.2 Operations**

Because of the distance and terrain, the new antenna would not be visible from the traditional Hawaiian cultural areas at the westernmost tip of the island (see also discussions on Visual Resources in Section 4.1.1.9). Operational activities for the new antenna would have no impact on cultural resources.

#### **4.1.1.6 Safety and Occupational Health**

##### **4.1.1.6.1 Facility Construction and Demolition**

For the Proposed Action for the HTS, workers (including both military personnel and contractors) would be required to comply with applicable AFOSH, OSHA, and Hawaii OSHA regulations and standards. Because all construction-related activities would occur well within installation boundaries, the general public would not be exposed to health and safety risks. Consequently, no significant impacts to health and safety are expected.

##### **4.1.1.6.2 Operations**

Of particular importance during operation of the new HTS A-Side RBC antenna are the potential health risks from the RF (non-ionizing) radiation emitted. Non-ionizing radiation (NIR) can have harmful health effects (e.g., heating of body tissue) if uncontrolled. To prevent such health risks, the new antenna would be operated and maintained in accordance with AFOSH Standard 48-9 and the NIR exposure limits set by the Institute of Electrical & Electronics Engineers, Inc. (IEEE) Standard C95.1 (*IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz*), which serves as a consensus standard developed by industry, the scientific community, and government agencies.

Based on the NIR hazard study of the proposed HTS A-Side RBC antenna recently conducted for the USAF (Sacks, 2010a), the NIR exposure limits for the new antenna would be 1 milliwatt per centimeter squared (mW/sq cm) averaged over 30 minutes for the general population (uncontrolled exposure), and 6 mW/sq cm averaged over 6 minutes for on-site employees (controlled exposure). “Controlled exposures” refer to locations where there is exposure that may be incurred by persons who are aware of the potential for exposure as a concomitant of employment and “uncontrolled exposure” includes all locations where potential exposure to the general public may exist.

Figure 4-1 is taken from the NIR hazard study and shows where the antenna power density levels were calculated as a function of distance from the antenna for three different sampling paths: (1) along the antenna axis; (2) along the antenna rim; and (3) 6 ft (1.8 m) above the ground with the antenna pointed at its minimum operational angles of zero and three degrees. Figure 4-2 shows the expected computed NIR power levels for these three distances away from the vertex of the proposed HTS A-Side antenna. The safe controlled and uncontrolled exposure level thresholds are met at all locations 6 ft (1.8 m) above the ground. In addition, both the controlled and uncontrolled exposure levels along the antenna rim are below the IEEE recommended exposure limits. The study also showed that ground reflections added little modification to expected exposure levels (Sacks, 2010a).

Based on calculations of minimum safe distances from the proposed HTS A-Side RBC antenna, NIR hazard zones would extend up to 2,500 ft (762 m) along the antenna beam center axis (Sacks, 2010a). Operation of the new antenna, however, would not allow any land areas within 2,500 ft (762 m) to be exposed to the main beam. Antenna safety features, including low elevation mechanical stops and software limits, would be used to prevent personnel on the ground from being exposed to hazardous NIR

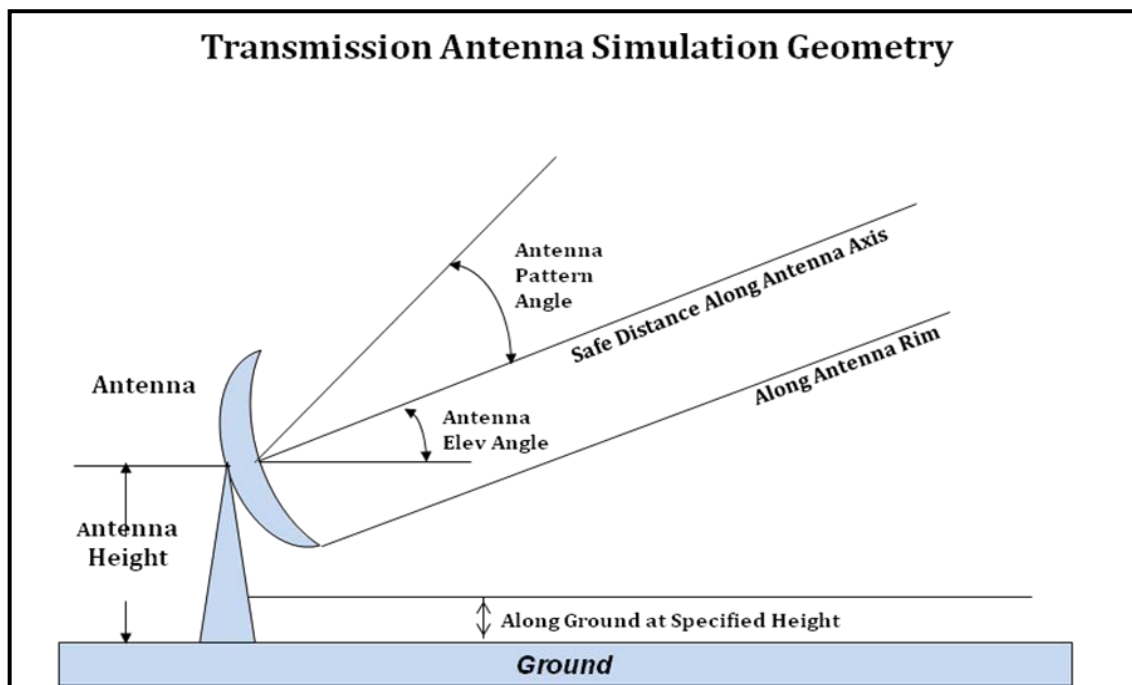


Figure 4-1. Transmission Radio Frequency Antenna Simulation Geometry

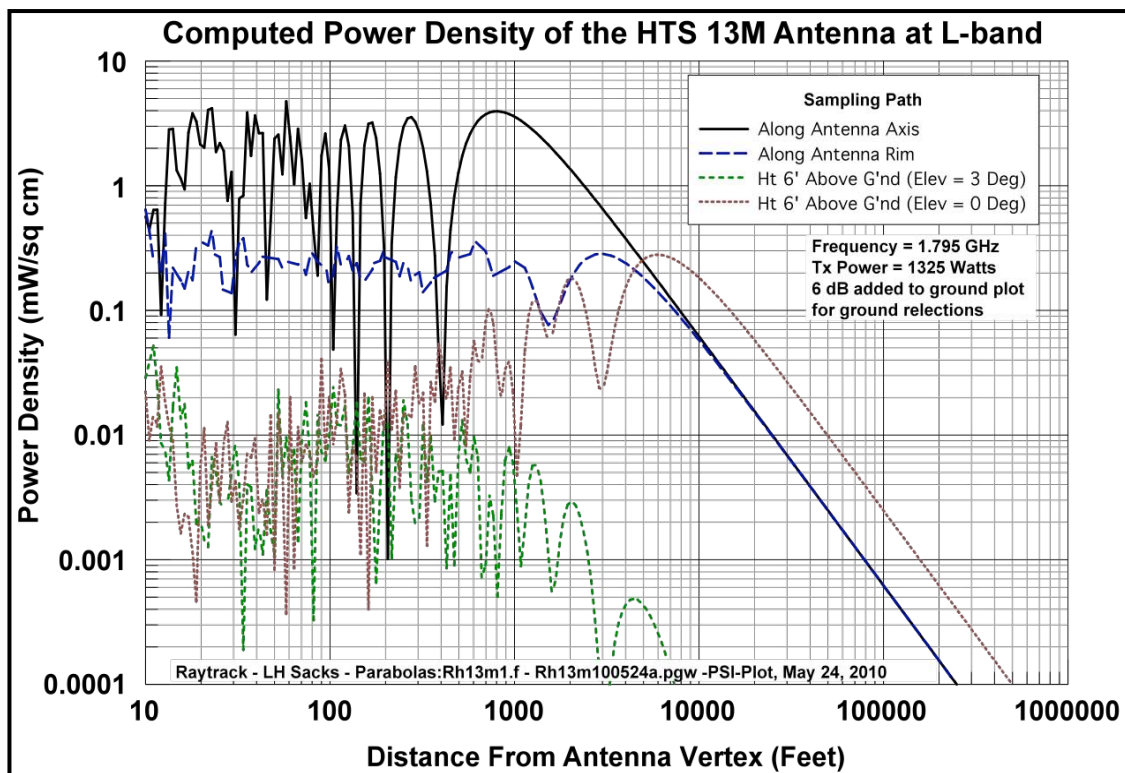


Figure 4-2. Computed Power Density of the HTS A-Side RBC Antenna

levels. In addition, signs, warning lights, and key interlocks would be used to warn or prevent KPSTS personnel from entering areas where main beam NIR limits might be exceeded (e.g., building rooftops).

Upon completion of the proposed HTS A-Side antenna installation, an RF radiation survey would be conducted in accordance with AFSPC Manual 91-710 (*Range Safety User Requirements*). The purpose of this survey would be to validate the calculated and estimated safe distances and safe exposure limits for uncontrolled (general population) and controlled (employees) personnel described above. This would confirm that the proposed antenna system is in compliance with regulatory radio frequency exposure limit requirements.

Based on the above safety precautions that the USAF would implement as part of the Proposed Action, no significant impacts to safety and occupational health are expected.

#### **4.1.1.7 Hazardous Materials and Waste Management**

##### ***4.1.1.7.1 Facility Construction and Demolition***

During demolition of one of the legacy antennas under Alternatives 1 and 2, scrap metal and electronic equipment would be taken to the DRMO in Kapolei, Oahu, for disposal, recycling, and reuse. Other construction and demolition waste materials (e.g., siding, concrete, sheetrock, etc.) would be disposed of at an appropriate landfill licensed to accept such materials.

Abatement procedures for asbestos and lead-based paint may be necessary during the demolition of the legacy antenna and modifications to Building 10 for the core electronics. Hazardous wastes generated or encountered during the construction phase of the action alternatives would be handled and disposed of in accordance with Federal, state, and DoD regulations.

##### ***4.1.1.7.2 Operations***

During operations of the HTS, small quantities of glycol, lubricants, and cleaners would be used during the maintenance and cleaning of the equipment. These amounts are within the limits of the existing small quantity generator status for KPSTS.

Based on the procedures in place at KPSTS, no significant impacts to hazardous materials and waste management are expected.

#### **4.1.1.8 Infrastructure**

##### ***4.1.1.8.1 Facility Construction and Demolition***

Short-term minor adverse effects on traffic would be expected both on KPSTS and along the Farrington Highway (Route 93) in the Waianae coast area. Traffic would increase due to additional construction vehicles and possible minor traffic delays near construction sites. These effects would be temporary in nature, confined to the KPSTS, and would end with the construction and demolition phases. The local roadway infrastructure would be sufficient to support construction vehicle traffic. In addition, road closures or detours to accommodate utility work would not be expected. All construction vehicles would be equipped with backing alarms, two-way radios, and Slow Moving Vehicle signs when appropriate. Although the effects would be minor, contractors would route and schedule construction vehicles to avoid conflicts with other traffic, and strategically locate staging areas to minimize traffic impacts.

#### **4.1.1.8.2      *Operations***

No measurable long-term effects on KPSTS traffic or gate traffic would be expected to result from the antenna operations. Implementation of the Proposed Action would not negatively impact the utilities at KPSTS.

#### **4.1.1.9      *Visual Resources***

##### **4.1.1.9.1      *Facility Construction and Demolition***

The final height of the radome for the new HTS A-Side RBC antenna would be approximately 83 ft (25 m) above ground level. From a distance, the new antenna would have a similar appearance to that of the existing ARTS Side-A antenna. Figure 4-3 provides a photo rendition of how the new antenna, and the existing ARTS Side-A and NOAA antennas, would appear when viewed from Farrington Highway at the KPSTS gate entrance.

Although the new antenna would be visible along Kuaokala Ridge from the Farrington Highway and beach areas, the visual changes to the ridgeline would be minimal. Thus, no significant impacts to visual resources are expected.

##### **4.1.1.9.2      *Operations***

After construction is completed, the new radome facility would be an additional permanent visual feature within the view shed of KPSTS, along with the other existing buildings and antennas. These effects would be minor.

#### **4.1.1.10      *Coastal Zone Management***

In October 2010, the SMC/ENE submitted a HCZMP application for CZMA Federal Consistency Review to the Hawaii DBEDT's Office of Planning (Appendix A, pages A-6 through A-17). In a response letter dated November 10, 2010, the Office of Planning concurred with the application and determined that the Proposed Action would be consistent with the enforceable policies of the HCZMP, on the basis that the environmental mitigation measures represented in the consistency determination (and incorporated into this EA) are fully implemented (refer to Appendix A, page A-18).

##### **4.1.1.10.1      *Facility Construction and Demolition***

Construction, excavation, and demolition activities on KPSTS would be short-term in duration and are expected to have little or no effect on recreational areas outside of the Station. Public access to Kuaokala Forest Reserve and Kuaokala Game Management Area, however, would be affected due to increased construction-related traffic on the Station access road. Temporary traffic delays could occur when trucks and other heavy equipment use or block the access road. As described in Section 4.1.1.8.1, steps would be taken to minimize traffic delays. No measurable long-term impacts to beach or other coastal resources are expected from the proposed activities.

During implementation of the Proposed Action, the USAF would comply with all applicable policies of the Federal Coastal Zone Consistency regulations and the HCZMP.

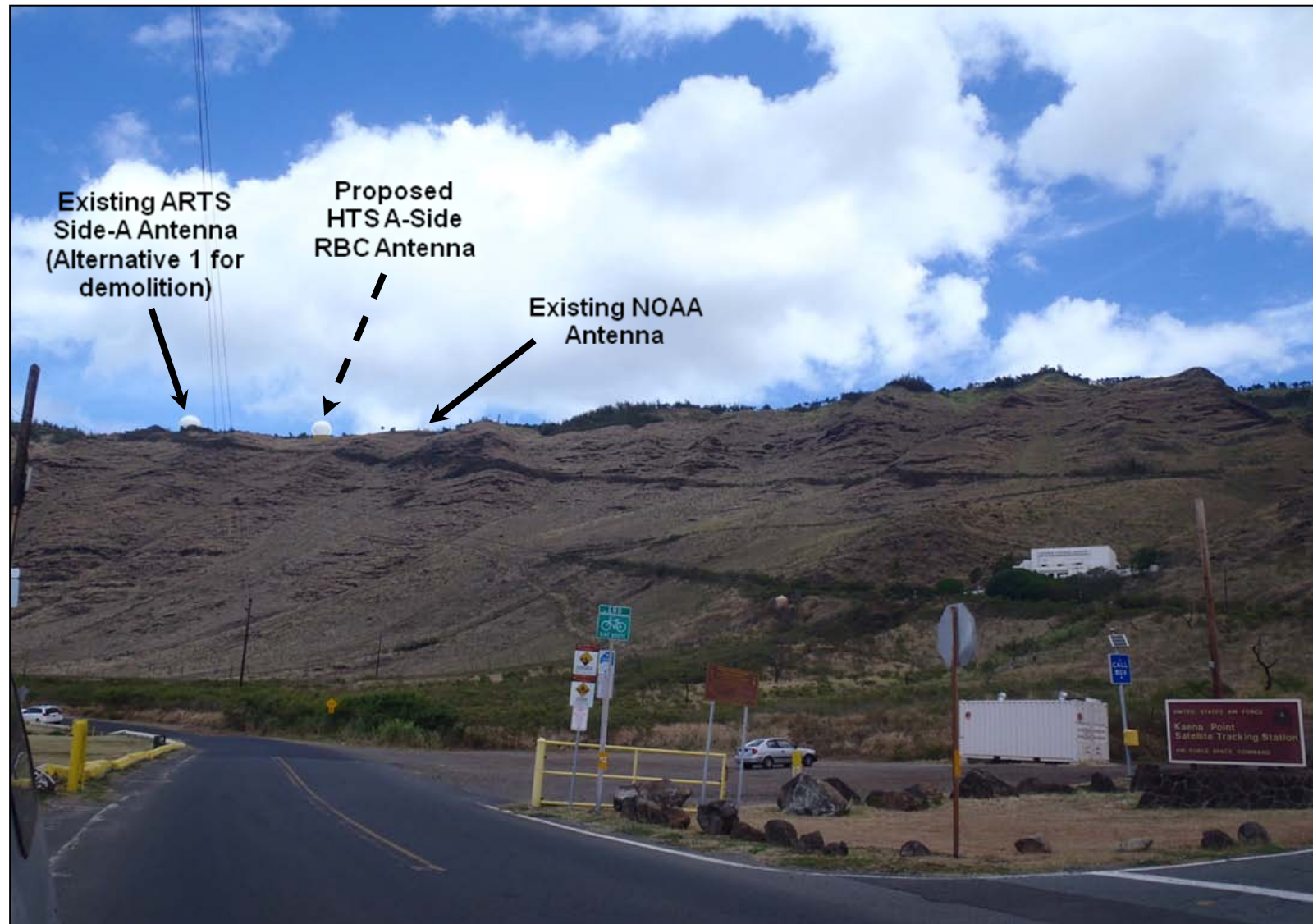


Figure 4-3. Photo Rendition of the Proposed HTS A-Side RBC Antenna

#### **4.1.1.10.2 Operations**

Following construction, the new HTS A-Side RBC antenna would be visible from coastal areas below Kuaokala Ridge. However, as described in Section 4.1.1.9, the new facility would have no significant effects on the scenic qualities of the area. No other HCZMP regulatory policy areas would be adversely affected during long-term operations.

### **4.1.2 GLOBAL ATMOSPHERE**

#### **4.1.2.1 Facility Construction and Demolition**

The Proposed Action would not induce a long-term addition to GHG in the atmosphere. Under the Proposed Action, all construction and demolition activities combined would generate approximately 593 tons (537 metric tons) of CO<sub>2</sub>. Detailed air emissions calculations for the Proposed Action are provided in Appendix B. The amount of CO<sub>2</sub> released by the Proposed Action would be less than 0.0001 percent of the anthropogenic emissions for this gas released on a global scale annually (USEPA, 2007).

#### **4.1.2.2 Operations**

Operational activities would generate approximately 671 tons (609 metric tons) of CO<sub>2</sub> each year, as shown in Appendix B. The CEQ recently released draft guidance on when and how Federal agencies should consider GHG emissions and climate change in NEPA analyses. The draft guidance includes a presumptive effects threshold of 27,558 tons (25,000 metric tons) of CO<sub>2</sub> equivalent emissions from a Proposed Action on an annual basis (CEQ, 2010). The GHG emissions associated with the Proposed Action fall well below the CEQ threshold. Although this limited amount of emissions would not likely contribute to global warming, any emission of GHG represents a minute increase that could have incremental effects on the global atmosphere.

Notably, there would be no CFCs or other ozone depleting substances used or released during the Proposed Action. Therefore, the Proposed Action would have no effect on the stratosphere ozone layer.

## **4.2 ENVIRONMENTAL CONSEQUENCES OF THE NO ACTION ALTERNATIVE**

Under the No Action Alternative, the USAF would not replace the HTS at KPSTS. As a result, potential impacts from proposed facility construction and demolition would not occur. USAF and KPSTS would continue ongoing operations, with environmental conditions expected to remain unchanged from that described for the Affected Environment in Chapter 3.0 of this EA.

## **4.3 CUMULATIVE EFFECTS**

Cumulative effects are considered to be those resulting from the incremental effects of an action when considering past, present, and reasonably foreseeable future actions, regardless of the agencies or parties involved. In other words, cumulative effects can result from individually minor, but collectively potentially significant, impacts occurring over the duration of the Proposed Action and within the same geographical area.

### **4.3.1 OTHER PROJECTS PROPOSED FOR KAENA POINT SATELLITE TRACKING STATION**

In addition to the proposed HTS A-Side RBC antenna project, other projects proposed at KPSTS include a water distribution system, solar telescope, and additional antennas. These projects are described below. The locations of the key existing and proposed antennas and telescope, are shown on Figure 4-4.



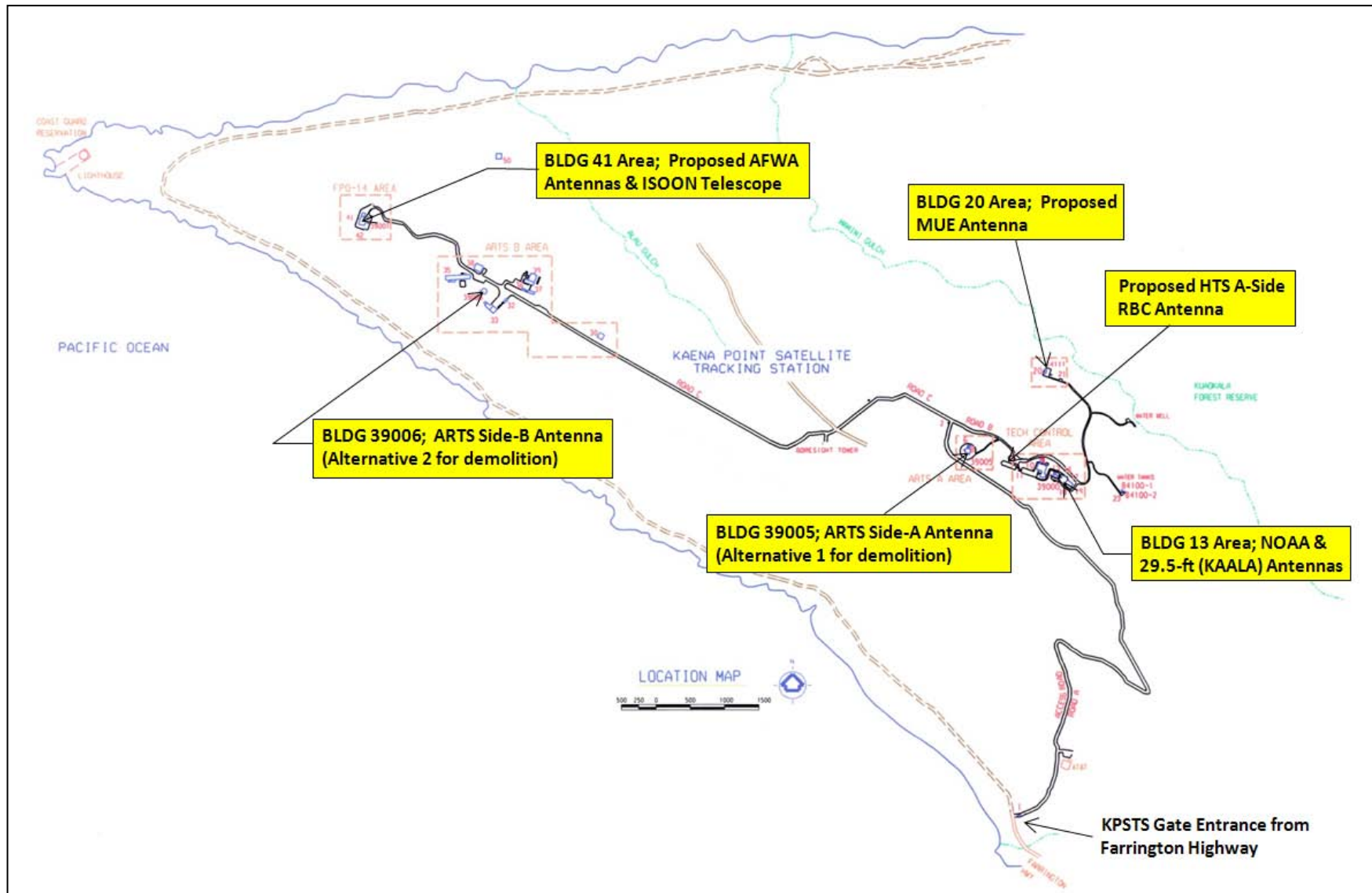


Figure 4-4. Locations of Existing and Proposed Antennas and Telescope at KPSTS

## **Water Distribution System**

Water at KPSTS is provided through the Dillingham waterline, which is used for all industrial, sanitary, and fire suppression uses. The Station currently relies on bottled water for human consumption. A project to upgrade the water distribution system is scheduled to be completed in 2011. The existing onsite deep well (ID No. 3314-03) is being evaluated for restoration as the primary water supply and is currently undergoing repairs. It is anticipated that appropriate water quality standards will be reestablished through the distribution system upgrades.

## **Mission Unique Equipment (MUE) Communications Antenna**

The MUE Communications Antenna project would construct a 44-ft (13 m) communications antenna that would have both indoor and outdoor system components. The outdoor system components would include the communications antenna, pedestal, and riser on a dedicated foundation. The proposed communications antenna would be mounted on a full-motion tracking pedestal, which would be mounted on a 24-ft (7.3 m) tall steel riser. This outdoor system would be enclosed by a radome that would be 52 ft (16 m) in height and 64 ft (19.5 m) in diameter. The radome would be mounted to a separate ring wall foundation. The indoor system components would include one hardware rack with transmit- and receive-chain equipment and interface cabling. Excavation and other ground disturbance would affect approximately 0.2 acres (0.08 hectares).

## **Improved Solar Observing Optical Network (ISOON) Telescope**

The Air Force Weather Agency (AFWA) is proposing to install an ISOON telescope at KPSTS. To accommodate the new telescope, a portion of the north end of Building 41 would be demolished and reconstructed to accommodate the telescope and related equipment. A new raised concrete pad for telescope support would extend several feet beyond the original building footprint. Overall, the new structure would be smaller than the original and would have a height of approximately 13 ft (4 m). All construction and excavation would occur within existing concrete or paved areas.

## **Relocation of Air Force Weather Agency Mission**

The AFWA will be moving their mission from Palehua, Hawaii, to KPSTS. The project will involve moving five existing antennas, along with their operational control equipment and support personnel that are currently in use at Palehua, to the Building 41 area at KPSTS. Earthwork would include excavation for antenna pedestal pads and minor trenching for running communication and power cables. All trenching is proposed to be done on previously developed areas.

As part of the relocation, the USAF plans to install a Radio Interference Measuring Set (RIMS) 28-ft (8.5-m) diameter antenna (approximately 54 ft [16.4 m] high) on the southeast side of Building 41. This antenna is the largest structure associated with the AFWA mission relocation. Additionally, the USAF plans to: (1) co-locate a 20-ft (6-m) high Solar Radio Spectrograph (SRS) high-band antenna with the RIMS 28-ft (8.5-m) antenna on the south side of Building 41, (2) install a RIMS “3/8 ft” antenna (approximately 22 ft [6.7 m] high) on the east side of Building 41, and (3) install a 20-ft (6-m) high SRS low-band antenna on the west side of Building 41.

All equipment related to the AFWA mission relocation shall be installed on previously disturbed areas at KPSTS. Additionally, the largest structure (28-ft [8.5-m] diameter dish) will stand approximately the same height (but much smaller in circumference and expanse) as the former FPQ-14 antenna (40-ft [12-m] diameter dish) that was recently removed from the northeast side of Building 41.



## Other Projects

In addition to those projects described above, KPSTS is currently in the process of having the Cold War-era cable tray, which runs along part of the ridgeline, removed. The Station also has long-term plans to demolish up to 11 other buildings and construct one new storage building.

### 4.3.2 CUMULATIVE EFFECTS AT KAENA POINT SATELLITE TRACKING STATION

#### Air Quality

Implementation of the Proposed Action along with the other projects proposed at KPSTS would cause short-term minor and long-term negligible effects on air quality. A review of the site's existing Synthetic Minor Operating permit would be conducted and an HDOH Minor Operating permit for a Non-covered Source would be obtained, if necessary. The total direct and indirect emissions would be *de minimis* (of minimal importance), not be regionally significant, and not contribute to a violation of KPSTS's air operating permit or any air regulation.

#### Noise

The Proposed Action and the other projects at KPSTS would cause short-term, minor adverse effects on noise. Impacts would be related to construction activities and the maintenance and testing of the antenna's backup generator for 30 minutes once a week. Operations would not generate disruptive noise levels for any sensitive receptors or for any off-station areas. Most operations would occur within enclosed facilities. These activities would be similar when compared to current on-base activities, and would not appreciably change the current noise environment. As a result, the Proposed Action in addition to the other projects is not expected to cause significant cumulative noise impacts.

#### Water Resources

For each project, excavation and other ground disturbing activities would incorporate adequate control measures to prevent sediment runoff into local streams and drainages. Runoff from the construction site would be controlled by BMPs, (e.g., construction of diversion ditches, benches, and berms) and measures required by the HDOH Notice of Intent and SWMP and the KPSTS SWMP. In addition, a dewatering pond would be installed and maintained during the construction phase to capture storm water collected in open excavations. Because the Proposed Action would include up to approximately 1.3 acres (0.5 hectares) of ground disturbance, the contractor would be required to obtain an HDOH stormwater construction permit as required under Hawaii Administrative Rules 11-55. Implementation of the Proposed Action along with the other projects proposed at KPSTS would cause short-term, minor adverse effects on water resources. No long term impacts would result from the operation of the Proposed Action with the other projects.

#### Biological Resources

The vast majority of activities associated with the Proposed Action and other projects would occur in previously disturbed lands, including roads, parking lots, and other paved and open areas. The relocation of the helipad for the Proposed Action would impact approximately 0.5 acres (0.2 hectares) of a previously disturbed area dominated by invasive woody plant species. Because construction activities associated with the Proposed Action and other projects would be limited to mostly developed, landscaped, or previously disturbed areas, potential impacts to wildlife would be minimal and short-term.

No threatened or endangered species were observed in previous studies in the immediate project areas. The US Fish and Wildlife Service stated they do not have records of Federally-listed or proposed threatened or endangered species, or designated or proposed critical habitats occurring at the Proposed Action location. Implementation of the Proposed Action and other projects is unlikely to impact threatened or endangered species.

KPSTS has environmental management plans in place to minimize KPSTS impacts to adjacent lands and natural resources. Implementation of the Proposed Action, along with the other projects proposed at KPSTS, would have minimal impacts on vegetation and there would not be long-term impacts to wildlife. There would be no cumulative impact on threatened or endangered species.

### **Cultural Resources**

KPSTS has an ICRMP already in place for the long-term protection and management of cultural resources at the Station (Tomonari-Tuggle, 2008). In accordance with Federal and state regulations, KPSTS personnel coordinate and consult with the SHPD and Native Hawaiian Organizations whenever there is potential for cultural resources to be affected. Through consultations and the implementation of appropriate mitigations, the KPSTS is able to avoid or minimize adverse effects to historic, archaeological, or traditional cultural resources for each individual project. Thus, no significant cumulative impacts to cultural resources are expected.

### **Safety and Occupational Health**

During the various construction activities, workers (including both military personnel and contractors) would be required to comply with applicable AFOSH, OSHA, and Hawaii Occupational Safety and Health regulations and standards. Because all construction-related activities would occur well within installation boundaries, the general public would not be exposed to health and safety risks. Based on the safety precautions that the USAF would have in place prior to implementation of the various projects, no significant cumulative impacts to safety and occupational health are expected.

There are several existing and proposed antennas at KPSTS; however, the majority of antennas do not transmit RF radiation. These include five AFWA antennas near Building 41, the NOAA antenna in the Building 13 area, and the Missile Defense Agency antenna near the HTS B-side antenna. The other antennas shown on Figure 4-4 would transmit RF radiation. These include the proposed MUE communications antenna near Building 20, the ARTS Side-A and Side-B antennas, and the KAALA antenna near Building 13. The radio antennas at KPSTS are geographically located to ensure minimal RF interference.

The proposed addition of the HTS A-Side RBC antenna with other existing transmitting antennas at KPSTS was studied for cumulative NIR effects (Sacks, 2010b). Plots similar to Figure 4-2 were generated for the other antenna systems. A summary of the study results is shown in Table 4-2. Safe operational levels are met at all distances and operational configurations for the antenna systems shown in Table 4-2. The addition of the proposed HTS A-Side RBC antenna is not expected to add any cumulative impact to the existing NIR environment at KPSTS, particularly when one of the ARTS antennas is to be decommissioned as part of the Proposed Action.

Fixed and rotary wing aircraft would not fly within the main beam distances shown in Table 4-2 for uncontrolled exposure levels. Therefore, the Proposed Action does not add any risk of exceeding the maximum permissible exposure for personnel in aircraft. Just as described in Section 4.1.1.6.2 for the HTS A-Side RBC antenna, the other antenna systems have operational safe guards to prevent personnel on the ground from being exposed to hazardous NIR levels. In addition, signs, warning lights, and key

**Table 4-2. Antenna Summary for Kaena Point Tracking Station**

Location	Antenna	Antenna Type	Transmission Frequency	Safe Distance (Controlled Exposure)	Safe Distance (Uncontrolled Exposure)
Near Helipad	Proposed HTS A-Side RBC	43 ft (13 m) Reflector	1.8 GHz	All	All on Ground (2500 ft [762 m] on beam center axis)
Building 39005	ARTS Side-A	60 ft (18 m) Reflector	1.75 - 1.85 GHz	All	All on Ground (3500 ft [1067 m] on beam center axis)
Building 39006	ARTS Side-B	46 ft (14 m) Reflector	1.75 - 1.85 GHz	All	All on Ground (3000 ft [914 m] on beam center axis)
Building 20 Area	MUE L-Band	44.5 ft (13.5 m) Reflector	6.70 - 7.075 GHz	All	All on Ground (3000 ft [914 m] on beam center axis)
	MUE X-Band		1.76 - 1.84 GHz	All	All on Ground (10000 ft [3048 m] on beam center axis)
Building 13 Area	KAALA	29.5 ft (9 m) Reflector	5.9 - 6.4 GHz	All	All on Ground (All on beam center axis)

interlocks are used to warn or prevent KPSTS personnel from entering areas where main beam NIR limits might be exceeded (e.g., building rooftops).

### **Hazardous Materials and Waste**

There would be no negative impacts associated with hazardous substances due to implementing the Proposed Action and the other projects. Hazardous wastes generated or encountered during the construction phase of the various activities would be handled in accordance with Federal, state and DoD regulations. Operation of the projects proposed at KPSTS would generate small quantities of wastes during the maintenance and cleaning of equipment. These amounts would be within the limits of the existing small quantity generator status for KPSTS. Based on the procedures in place at KPSTS, no significant cumulative impacts to hazardous materials and waste management are expected.

### **Infrastructure**

Short-term minor adverse effects on traffic would be expected both on KPSTS and along the Farrington Highway (Route 93) in the Waianae coast area. Traffic would increase due to additional construction vehicles and possible minor traffic delays along the KPSTS access road. These effects would be temporary in nature and would end with the construction phase. The local roadway infrastructure would be sufficient to support construction vehicle traffic. All construction vehicles would be equipped with backup alarms, two-way radios, and Slow Moving Vehicle signs when appropriate. Although the effects would be minor, contractors would route and schedule construction vehicles to avoid conflicts with other traffic, and strategically locate staging areas to minimize traffic impacts.

No measurable long-term effects on KPSTS traffic or gate traffic would be expected to result from the operation of the various projects. Implementation of the Proposed Action and the other projects would not negatively impact the utilities at KPSTS.

### **Visual Resources**

As the photo rendition in Figure 4-3 shows, the proposed HTS A-Side RBC antenna would have little impact on the view of this portion of Kuaokala Ridge. Removal of the ARTS Side-A antenna (Alternative 1 for demolition) would allow the view of the ridge to remain virtually unchanged. The ARTS Side-B antenna (Alternative 2 for demolition) and the proposed AFWA antennas at Building 41 (see Figure 4-4) are further to the west and outside of the viewshed for the proposed HTS A-Side RBC antenna. The other antenna projects, including the proposed MUE antenna, are expected to have little or no impact on the visual qualities of the ridgeline.

### **Coastal Zone Management**

As described earlier, KPSTS is located on lands leased from the State of Hawaii. The steep slopes immediately south of KPSTS and Kuaokala Ridge are State park lands. The areas immediately north of KPSTS and Kuaokala Ridge are mostly unimproved forests and shrublands within the State's Kuaokala Forest Reserve and Kuaokala Game Management Area. These areas are used by hunters, hikers, and campers. No recreational areas are present on KPSTS. As part of the lease agreement with the State, the USAF must allow public access to the State lands from Farrington Highway (Route 93) through the Station access road. A permit issued by the State is required for individuals using the access road. Construction, excavation, and demolition activities on KPSTS would be short-term in duration and are expected to have little or no effect on recreational areas outside of the Station. Public access to Kuaokala Forest Reserve and Kuaokala Game Management Area, however, would be affected due to increased construction-related traffic on the Station access road. Brief traffic delays could occur when trucks and other heavy equipment use or temporarily block the access road. As described earlier for infrastructure, steps would be taken to minimize traffic delays. No measurable long-term impacts to beach or other coastal resources are expected from the construction, excavation, and demolition activities.

For each project described in Section 4.3.1, the USAF would comply with Federal Coastal Zone Consistency regulations and the Hawaii Coastal Zone Management Program.

#### **4.3.3 CUMULATIVE EFFECTS ON THE GLOBAL ATMOSPHERE**

On a global basis, the Proposed Action would release a minute quantity of CO<sub>2</sub> compared to anthropogenic releases worldwide. Under the Proposed Action, all construction activities combined would generate approximately 593 tons (537 metric tons) of CO<sub>2</sub>, and operational activities would generate approximately 671 tons (609 metric tons) of CO<sub>2</sub> each year. As described earlier, such levels would fall well below CEQ's draft threshold guidance for GHG annual emissions—a presumptive effects threshold of 27,558 tons (25,000 metric tons) of CO<sub>2</sub> equivalent emissions from a Proposed Action on an annual basis (CEQ, 2010). This limited amount of emissions would not contribute significantly to cumulative global warming; however, any emissions of GHG represent an incremental increase that could have incremental effects on the global atmosphere.

Because the HTS emissions would not release ozone depleting substances, there would be no cumulative impacts on the stratospheric ozone layer.

#### 4.4 SUMMARY OF ENVIRONMENTAL MANAGEMENT AND MONITORING ACTIONS

Throughout this EA, various management controls and engineering systems are described. Required by Federal, state, DoD, and USAF environmental, health, and safety regulations, the Det 3, 21 SOPS/CE implements these measures through normal operating procedures. Although the USAF does not expect significant or other major impacts to result from implementation of the Proposed Action, some specific environmental management activities have been identified to minimize the level of impacts that might occur at KPSTS. These are summarized below and include the relevant sections of the EA where they are further described.

- A review of the KPSTS's existing Synthetic Minor Operating permit would be conducted and an HDOH Minor Operating permit for any new stationary sources of air emissions (e.g., generators) would be obtained if necessary. (Section 4.1.1.1.2)
- Proposed construction and demolition activities would comply with HAR 11-46. Because KPSTS borders state park lands, an HDOH Noise Variance application would be submitted for the proposed construction and demolition activities, as necessary. (Section 4.1.1.2.1)
- Construction workers and base personnel would be required to comply with the USAF Hearing Conservation Program requirements and other applicable occupational health and safety regulations. (Section 4.1.1.2.1)
- Because of the continuous operation of the electric-powered inflatable blower package, hearing protection would be required for personnel at all times while inside the radome. In accordance with the AFOSH Standard 48-20, KPSTS personnel would monitor facility noise levels inside the radome and determine appropriated hearing protection equipment. (Section 4.1.1.2.2)
- In compliance with HAR 11-46, an HDOH Noise Variance application would be submitted for the new emergency generator, as necessary. (Section 4.1.1.2.2)
- To prevent polluted runoff during construction/demolition activities, runoff from the project sites would be controlled by BMPs, (e.g., construction of diversion ditches, benches, and berms to divert runoff to protected drainage courses,) and measures required by the project HDOH Notice of Intent and Storm Water Management Plan, as well as the KPSTS Storm Water Management Plan. (Section 4.1.1.3.1)
- A dewatering pond would be installed and maintained during the construction phase to capture storm water collected in open excavations. Upon project completion, the pond would be restored to natural cover in accordance with site seeding requirements. The contractor would be responsible for maintaining the basin in accordance with the requirements set forth in the civil construction specifications/requirements prepared by KPSTS. (Section 4.1.1.3.1)
- Because the Proposed Action would impact more than 1 acre (0.4 hectare) overall, the contractor would be required to obtain an HDOH storm water construction permit as required under HAR 11-55. (Section 4.1.1.3.1)
- Prior to initiating construction, KPSTS personnel would contact the appropriate Native Hawaiian Organization(s) or individual(s) to coordinate the blessing ceremony. (Section 4.1.1.5)

- The construction contractor would provide continuous archaeological resource monitoring during all ground-disturbing activities. If human remains or other archaeological materials are inadvertently discovered during ground disturbance, work in the vicinity of the discovery would stop and the contractors and KPSTS personnel would take measures to help secure any remains, archaeological materials, and associated context. If the remains are determined likely to be of native Hawaiian origin, the Office of Hawaiian Affairs, the Oahu Island Burial Council, Hui Malama I Na Kupuna O Hawaii Nei, and interested parties will be notified and requested to consult in accordance with the Native American Graves Protection and Repatriation Act. Similarly, if any archaeological or other historic resources (including lava tubes and lava blisters/bubbles) are inadvertently discovered, work in vicinity would stop and the SHPD would be notified immediately. All mitigating steps taken would be conducted in accordance with the KPSTS ICRMP. (Section 4.1.1.5.1)
- KPSTS would mitigate the effects of demolishing a possible Cold War-era antenna facility (Building 39005 or 39006) by compiling a facility record consisting of original design plans, photographs, and a brief discussion on the facility's history. (Section 4.1.1.5.1)
- HTS A-Side RBC antenna safety features would include low elevation mechanical stops and software limits to prevent personnel on the ground from being exposed to hazardous NIR levels. In addition, signs, warning lights, and key interlocks would be used to warn or prevent KPSTS personnel from entering areas where main beam NIR limits might be exceeded (e.g., building rooftops). (Section 4.1.1.6.2)
- Upon completion of the proposed HTS A-Side antenna installation, an RF radiation survey would be conducted in accordance with AFSPC Manual 91-710. (Section 4.1.1.6.2)
- All construction vehicles would be equipped with backing alarms, two-way radios, and Slow Moving Vehicle signs when appropriate. Contractors would route and schedule construction vehicles to avoid conflicts with other traffic, and strategically locate staging areas to minimize traffic impacts. (Section 4.1.1.8.1)

## 5.0 LIST OF REFERENCES

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## 6.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS CONSULTED

The following agencies, organizations, and individuals were consulted or provided information during the preparation of the EA:

**Hawaii Department of Business, Economic Development, & Tourism, Office of Planning, Hawaii Coastal Zone Management Program, Honolulu, Hawaii**

- Abbey Seth Mayer
- John Nakagawa

**Hawaii Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawaii**

- Pua Aiu
- Ross W. Stephenson

**Hui Malama I Na Kupuna O Hawaii Nei, Waianae, Hawaii**

- William J. Aila, Jr.

**Hui Malama O Makua, Waianae, Hawaii**

- Fred Dodge

**Kaena Point Satellite Tracking Station, Waianae, Hawaii**

- Major Marty W. Easter, Commander, Det 3, 21 SOPS
- Lance Hayashi, Chief of Civil Engineering, Det 3, 21 SOPS/CE
- Lynn Cruz, Environmental Scientist, TEAM I.E. Inc.
- Dave Jacobs, Environmental Scientist, TEAM I.E. Inc.

**Kawaihapai Ohana, Waialua, Hawaii**

- Thomas Shirai, Jr.

**Koa Mana, Waianae, Hawaii**

- Hanale Hopfe

**Office of Hawaiian Affairs, Honolulu, Hawaii**

- Keola Lindsey
- Clyde W. Nāmu'o

**Pacific Justice and Reconciliation Center, Honolulu, Hawaii**

- Kahu Kaleo Patterson

**Royal Order of Kamehameha, Kapolei, Hawaii**

- Shad Kane

**Shriever Air Force Base, Colorado**

- Walter H. Roberts, 50 CES/CECR
- Blaine E. Beckstrom, 50 SW/JA

**US Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii**

– Aaron Nadig

## 7.0 LIST OF PREPARERS AND CONTRIBUTORS

**US Air Force Space and Missile Systems Center—Acquisition Civil/Environmental Engineering Division** representatives responsible for managing the development of the EA are listed below:

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Charles P. Griffice, HTS-A RBC Upgrade Environmental Support, Aerospace Corporation

Mary Ellen Vojtek, HTS-A RBC Upgrade Environmental Support, Aerospace Corporation

**US Air Force Space and Missile Systems Center—Satellite Control and Network Systems Division** representatives responsible for HTS-A information and assistance during development of the EA are listed below:

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1Lt Jessica M. Schroeder, SMC/SN, Los Angeles AFB

Gilbert T. Takahashi, Aerospace Corporation

The following contractors prepared the EA on behalf of the US Air Force Space and Missile Systems Center:

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Mary Lou Kriz, Principal Technologist	BA, Geoenvironmental Studies, Shippensburg University BS, Biology, Shippensburg University	14
Jacqueline M. Marriott, Co-op Analyst	BS, Civil Engineering, University of Alabama in Huntsville ( <i>in progress</i> )	2
Rickie D. Moon, Senior Systems Engineer	MS, Environmental Management, Samford University BS, Chemistry and Mathematics, Samford University	28
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<b>LPES, Inc.</b>		
Timothy Lavallee, PE, Principal/Senior Engineer	BS, Mechanical Engineering, Northeastern University MS, Civil and Environmental Engineering, Tufts University	18

Name/Position		Degrees	Years of Experience
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<b>Elizabeth Harding &amp; Associates, P.C.</b>			
Elizabeth Harding, Esq., President	BA, Wayne State University JD, Wayne State University School of Law	30	

## 8.0 DISTRIBUTION LIST

The following is a list of agencies and organizations that were sent a copy of the Draft EA/Draft FONSI:

- Hawaii Department of Business, Economic Development, and Tourism, Office of Planning, Hawaii Coastal Zone Management Program
- Hawaii Department of Land and Natural Resources, Land Division
- Hui Malama I Na Kupuna O Hawaii Nei
- Hui Malama O Makua
- Kawaihapai Ohana
- Koa Mana
- Office of Hawaiian Affairs
- Pacific Justice and Reconciliation Center
- Royal Order of Kamehameha
- US Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office

The following is a list of libraries that were sent a copy of the Draft EA/Draft FONSI:

- Waianae Public Library, 85-625 Farrington Hwy. Waianae, HI 96792-2406
- Waialua Public Library, 67-068 Kealohanui Street Waialua, HI 96791-8100

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***APPENDIX A***

***AGENCY AND ORGANIZATION  
CORRESPONDENCE***

LINDA LINGLE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION  
601 KAMOKILA BOULEVARD, ROOM 555  
KAPOLEI, HAWAII 96707

LAURA H. THIELEN  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

PAUL J. CONRY  
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LENORE N. OHYE  
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AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

DATE: December 7, 2010

LOG: 2010.3737

DOC: 1011RS60

TO: Marty W. Easter  
Major, USAF  
Kaena Point Satellite Tracking Station  
P. O. Box 868  
Waianae, HI 96792-0868

SUBJECT: National Historic Preservation Act (NHPA) Section 106 Consultation  
Permit # (None)  
Building Owner: USAF  
Location: Kaena Point Satellite Tracking Station (KPSTS)  
Tax Map Key: (1) 6-9-003:003 and :005

This letter is in response to materials, dated November 16, 2010 and received by this office on November 18, 2010, re the proposed demolition of Cold War era facilities at Kaena Point Satellite Tracing Station. The project entails removal and replacement of an existing helipad, two short road realignments, destruction of either Building 39005 or 39006, and construction of a new 43 foot diameter antenna dish on a pedestal surrounded by a 22 foot high reinforced concrete ringwall. The new antenna would be enclosed in a 76 foot diameter inflatable radome which would be connected to Building 10 via buried copper cables. The area of potential effect would be the various footprints and, during work, areas immediately adjacent.

Building 39005 was constructed in 1968 and is thus less than 50 years of age. However, it was associated with the Station's satellite tracing mission. According to the KPSTS Integrated Cultural Resources Management Plan (ICRMP), it potentially qualifies as a Cold War structure.

Building 39006 was built in 1972 and also is less than 50 years of age. It was not evaluated in the ICRMP but was also associated with satellite tracking activities.

The USAF intends to continue operating similar satellite tracking facilities.

Your office has not yet decided which of the two buildings (39005 or 39006) that it intends to demolish or the extent of such demolition.

As neither of the two buildings is over 50 years of age, the NHPA will not apply. However, we appreciate your documentation commitment to compile a facility record consisting of original design plans, photographs, and a discussion of the station/facility history.

Based upon the information presented, we concur that the project will have no adverse effect on historic property.

Any questions should be addressed to Ross W. Stephenson, SHPD Historian, at (808) 692-8028 (office), (808) 497-2233 (cell) or [ross.w.stephenson@hawaii.gov](mailto:ross.w.stephenson@hawaii.gov).

Mahalo for the opportunity to comment.

  
Pua Kila  
Administrator

In the event that historic resources, including human skeletal remains, lava tubes, and lava blisters/bubbles are identified during construction activities, all work should cease in the immediate vicinity of the find, the find should be protected from additional disturbance, and the State Historic Preservation Division should be contacted immediately at (808) 692-8015.

PHONE (808) 594-1888

FAX (808) 594-1865



**STATE OF HAWAII**  
**OFFICE OF HAWAIIAN AFFAIRS**  
711 KAPI'OLANI BOULEVARD, SUITE 500  
HONOLULU, HAWAII 96813

HRD10/5394

November 29, 2010

Major Marty W. Easter  
United States Air Force  
Ka'ena Point Satellite Tracking Station  
P.O. Box 868  
Wai'anae, Hawaii 96792-0868

**RE: National Historic Preservation Act Consultation**  
**Hawai'i Tracking Station A-Side Antenna Remote Block Change Upgrade**  
**Ka'ena Point Satellite Tracking Station**  
**Wai'anae, Hawai'i**

Aloha e Major Easter,

The Office of Hawaiian Affairs (OHA) is in receipt of your November 16, 2010 letter initiating consultation pursuant to Section 106 of the National Historic Preservation Act for the proposed construction of the Hawai'i Tracking Station A-Side Antenna Remote Block Change Upgrade facility (undertaking) at Ka'ena Point Satellite Tracking Station (KPSTS). The undertaking will require the demolition of the existing KPSTS helipad and adjacent parking lot followed by the construction of a new helipad. Road realignments and installation of utilities will also be required. The majority of ground disturbance associated with this undertaking will occur in previously disturbed areas. The area of potential effect for this undertaking is depicted in "Attachment 4" included with your letter.

Once the undertaking is completed and the new facility is operational one of two existing Automated Remote Tracking Station at KPSTS will be selected for decommissioning and that building demolished. It is anticipated that this will not occur until 2013. You have determined that this undertaking will result in "no adverse effect" to historic properties. OHA concurs with your determination. Thank you for initiating consultation and providing an opportunity to comment. Should you have any questions, please contact Keola Lindsey at 594-0244 or keolal@oha.org.

‘O wau iho nō me ka ‘oia‘i‘o,

A handwritten signature in black ink, appearing to read "Clyde W. Nāmu'o".

Clyde W. Nāmu'o  
Chief Executive Officer

**From:** Pjrc [mailto:pjrcgo@gmail.com]

**Sent:** Wednesday, November 17, 2010 1:50 AM

**To:** Aragon, Leonard A Civ USAF AFSPC SMC/EAF

**Cc:** Easter, Marty W Maj Det 3, 21 SOPS/CC; Hayashi, Lance H Civ Det 3, 21 SOPS/CE; Cruz, Lynn R CTR Det 3, 21 SOPS/CEV; Jacobs, David A Civ Det 3, 21 SOPS/CEV; Huynh, Thomas T Civ USAF AFSPC SMC/EAF; Kriz, Joe; Moon, Rick

**Subject:** Re: Section 106 Review and Concurrence

This would be a perfect opportunity to investigate the subsurface for historic human remains, iwi kupuna, by utilizing historic human remain detection canine or dogs specializing in this technology. In addition the utilization of current advanced technologies related to GPR or ground penetrating radar, would be essential tests and documentation for this project and future endeavors. Recently the Army utilized HHRDC detection canine, and the Rail Project combined this technology with advanced GPR. See the Institute for Forensic Canine.

Sent from my iPhone

Dr. Kahu Kaleo Patterson

Pacific Justice and Reconciliation

**From:** Kaleo Patterson [mailto:kaleop@me.com]  
**Sent:** Monday, December 13, 2010 12:00 PM  
**To:** Det 3, 21 SOPS  
**Subject:** Section 106 11/16/10

Thank you for your materials on "no adverse effect"

Please note that great caution should be exercised in demolition and all ground disturbance, even in areas with previously disturbed or existing paved. Sometimes in these areas cultural layers and Iwi Kupuna have been preserved in place. Or have not been discovered because of deeper depth, or adjacent in walls of a trench or excavation. Many Iwi continue to be found in old paved roads or highways, Kakaako or Waikiki.

Also Archeological sites often have visual corridors that can be identified after demolition. Awareness for multiple site integrity is important.

Please contact me if you have any questions.

Sent from my iPhone  
Dr. Kahu Kaleo Patterson  
Pacific Justice and Reconciliation



**Hawaii CZM Program**  
Coastal Zone Management

## HAWAII CZM PROGRAM APPLICATION FOR CZM FEDERAL CONSISTENCY REVIEW

Project/Activity Title or Description: Hawaii Tracking Station A-Side Antenna Remote

Block Change Upgrade at Kaena Point Satellite Tracking Station

Location: Kaena Point Satellite Tracking Station, Waianae, HI

Island: Oahu

Tax Map Key: (1) 6-9-003:005

### Applicant and Agent Information

**1. Air Force Satellite Control Network**

Name of Applicant

483 North Aviation Boulevard

Address

LA AFB, CA

90245-2808

City & State

Zip Code

310-653-1402

Daytime Phone

Fax Number

gina.prasad@losangeles.af.mil

E-mail Address

**2. Leonard Aragon, SMC/EAF**

Name of Agent

483 North Aviation Boulevard

Address

LA AFB, CA

90245-2808

City & State

Zip Code

310-653-1222

310 653-1226

Daytime Phone

Fax Number

Leonard.Aragon@losangeles.af.mil

E-mail Address

### CZM Consistency Determination or Certification

☒ Check the type of application below and sign.

☒ I. Federal Agency Activity

CZM Consistency Determination: "The proposed activity will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawaii Coastal Zone Management Program."

Signature

*[Signature]*  
(Applicant or responsible party)

Date

8 Oct 10

☐ II. Federal Permit or License (Please sign below)

CZM Consistency Certification: "The proposed activity complies with the enforceable policies of Hawaii's approved management program and will be conducted in a manner consistent with such program."

Signature

(Applicant or responsible party)

Date

☐ III. Federal Grants and Assistance (Please sign below)

CZM Consistency Certification: "The proposed activity complies with the enforceable policies of Hawaii's approved management program and will be conducted in a manner consistent with such program."

Signature

(Applicant or responsible party)

Date

**Send To:** Office of Planning, P.O. Box 2359, Honolulu, Hawaii 96804

Print Form



**HAWAII CZM PROGRAM  
FEDERAL CONSISTENCY ASSESSMENT FORM**

**RECREATIONAL RESOURCES**

**Objective:** Provide coastal recreational opportunities accessible to the public.

**Policies:**

- 1) Improve coordination and funding of coastal recreation planning and management.
- 2) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
  - a) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
  - b) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites and sandy beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;
  - c) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
  - d) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
  - e) Encouraging expanded public recreational use of county, State, and Federally owned or controlled shoreline lands and waters having recreational value;
  - f) Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;
  - g) Developing new shoreline recreational opportunities, where appropriate, such as artificial reefs for surfing and fishing; and
  - h) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, County planning commissions; and crediting such dedication against the requirements of section 46-6.

RECREATIONAL RESOURCES (continued)

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Will the proposed action involve or be near a dedicated public right-of-way?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Does the project site abut the shoreline?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Is the project site near a State or County park?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is the project site near a perennial stream?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Will the proposed action occur in or affect a surf site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Will the proposed action occur in or affect a popular fishing area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Will the proposed action occur in or affect a recreational or boating area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the project site near a sandy beach?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Are there swimming or other recreational uses in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

Construction, excavation, and demolition activities for the HTS A-side RBC antenna project would be short-term in duration and are expected to have little or no effect on recreational areas outside of KPSTS. Public access to Kuaokala Forest Reserve and Kuaokala Game Management Area, however, would be affected due to increased construction-related traffic on the Station access road. Brief traffic delays could occur when trucks and other heavy equipment use or temporarily block the access road. Efforts would be made to minimize the duration and extent of such access-restricting activities and KPSTS would coordinate with appropriate state agencies to make the public aware of any temporary access restrictions. No measurable long-term impacts to beach or other coastal resources are expected from project implementation.

Land disturbance for the project is expected to be minor. Best Management Practices would be implemented to control erosion and sediment during excavation and other ground disturbance activities. Erosion and sediment control measures for the project would also comply with federal, state, and Air Force regulations so as not to impact any surface waters.



HISTORIC RESOURCES

Objective: Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

- 1) Identify and analyze significant archaeological resources;
- 2) Maximize information retention through preservation of remains and artifacts or salvage operations; and
- 3) Support State goals for protection, restoration, interpretation, and display of historic resources.

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Is the project site within a historic/cultural district?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Is the project site listed on or nominated to the Hawaii or National register of historic places?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Does the project site include undeveloped land which has not been surveyed by an archaeologist?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Has a site survey revealed any information on historic or archaeological resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Is the project site within or near a Hawaiian fishpond or historic settlement area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

There are no historic resources, including natural and man-made historic and pre-historic resources, within the project area that would be affected by the proposed activities.

SCENIC AND OPEN SPACE RESOURCES

Objective: Protect, preserve and where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

- 1) Identify valued scenic resources in the coastal zone management area;
- 2) Insure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;
- 3) Preserve, maintain and where desirable, improve and restore shoreline open space and scenic resources; and
- 4) Encourage those developments that are not coastal dependent to locate in inland areas.

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Does the project site abut a scenic landmark?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Does the proposed action involve the construction of a multi-story structure or structures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Is the project site adjacent to undeveloped parcels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Does the proposed action involve the construction of structures visible between the nearest coastal roadway and the shoreline?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Will the proposed action involve construction in or on waters seaward of the shoreline? On or near a beach?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

The steep slopes immediately south of KPSTS and Kuaokala Ridge are State park lands. The areas immediately north of KPSTS and Kuaokala Ridge are mostly unimproved forests and shrublands within the State's Kuaokala Forest Reserve and Kuaokala Game Management Area.

The final height of the radome for the new HTS A-side RBC antenna would be approximately 83 feet above ground level. From a distance, the new antenna would have a similar appearance to that of other existing KPSTS radomes along Kuaokala Ridge, one of which will be removed as part of project implementation. A photo rendition of the new radome can be found in the project description supplement. Thus, the project is expected to have little or no impact on the scenic qualities of the area.

COASTAL ECOSYSTEMS

**Objective:** Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

- 1) Improve the technical basis for natural resources management;
- 2) Preserve valuable coastal ecosystems of significant biological or economic importance;
- 3) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land water uses, recognizing competing water needs; and
- 4) Promote water quantity and quality planning and management practices, which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses, which violate State, water quality standards.

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Does the proposed action involve dredge or fill activities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Is the project site within the Shoreline Setback Area (20 to 40 feet inland of the shoreline)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Will the proposed action require some form of effluent discharge into a body of water?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Will the proposed action require earthwork beyond clearing and grubbing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Will the proposed action include the construction of special waste treatment facilities, such as injection wells, discharge pipes, or cesspools?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Is an intermittent or perennial stream located on or near the project site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Does the project site provide habitat for endangered species of plants, birds, or mammals?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is any such habitat located nearby?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Is there a wetland on the project site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Is the project site situated in or abutting a Natural Area Reserve?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Is the project site situated in or abutting a Marine Life Conservation District?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Is the project site situated in or abutting an estuary?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

The proposed project would be located within an area that is currently developed and removed from the coast. The project would not affect coastal ecosystems. Project related clearing, grubbing, grading, and excavation would affect up to approximately 1.3 acres within mostly developed and previously disturbed areas of KPSTS.

ECONOMIC USES

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

- 1) Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy;
- 2) Insure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
- 3) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
  - a) Utilization of presently designated locations is not feasible;
  - b) Adverse environmental effects are minimized; and
  - c) Important to the State's economy.

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Does the project involve a harbor or port?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Is the project site within a designated tourist destination area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Does the project site include agricultural lands or lands designated for such use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Does the proposed activity relate to commercial fishing or seafood production?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Does the proposed activity related to energy production?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Does the proposed activity relate to seabed mining?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

Because of the proposed project's location on Kuaokala Ridge, away from the coast, it would not affect the state's economic policies or coastal use and development.



COASTAL HAZARDS

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.

Policies:

- 1) Develop and communicate adequate information on storm wave, tsunami, flood erosion, and subsidence hazard;
- 2) Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazard;
- 3) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
- 4) Prevent coastal flooding from inland projects.

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Is the project site on or abutting a sandy beach?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Is the project site within a potential tsunami inundation area as depicted on the National Flood Insurance Program flood hazard map?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Is the project site within a potential flood inundation area according to a flood hazard map?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Is the project site within a potential subsidence hazard areas according to a subsidence hazard map?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Has the project site or nearby shoreline areas experienced shoreline erosion?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

KPSTS is located on the western most tip of Oahu, Hawaii, north of the town of Waianae. The facility is situated along Kuaokala Ridge over an approximately 2-mile area. The ground elevation of KPSTS ranges from approximately 800 to 1,400 feet above mean sea level. KPSTS would not affect or be affected by coastal hazards.

MANAGING DEVELOPMENT

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

- 1) Effectively utilize and implement existing law to the maximum extent possible in managing present and future coastal zone development;
- 2) Facilitate timely processing of application for development permits and resolve overlapping or conflicting permit requirements; and
- 3) Communicate the potential short- and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the general public to facilitate public participation in the planning and review process.

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Will the proposed activity require more than two (2) permits or approval? (Provide the status of each.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Does the proposed activity conform with the State and County land use designations for the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Has or will the public be notified of the proposed activity?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Has a draft or final environmental impact statement or an environmental assessment been prepared?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion:

An Environmental Assessment (EA) is being prepared for the proposed HTS A-side RBC antenna upgrade at KPSTS. A public notice on availability of the EA will be publicized.

## PUBLIC PARTICIPATION

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies:

- 1) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;
- 2) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and
- 3) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion. Please provide information about the proposal relevant to the Objective and Policies No. 2 and No. 3 above:

Notifications on availability of the project Environmental Assessment (EA) for public review will be advertised in the "Honolulu Star-Advertiser" and "The Environmental Notice." Copies of the EA will be placed in the Waianae and Waialua library branches. The EA will also be available over the Internet.

## BEACH PROTECTION

Objective: Protect beaches for public use and recreation.

Policies:

- 1) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;
- 2) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
- 3) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Discussion. Please provide information about the proposal relevant to the Objective and Policies above:

The proposed project is not located in or along any beach areas. The project will be located within an area that is currently developed. Erosion and sediment control measures will be implemented during the construction and demolition phases of the project.



MARINE RESOURCES

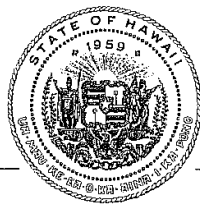
Objective: Implement the State's ocean resources management plan.

Policies:

- 1) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- 2) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- 3) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;
- 4) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
- 5) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and
- 6) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion. Please provide information about the proposal relevant to the Objective and Policies above:

The proposed project will not affect marine and coastal resources.

**DEPARTMENT OF BUSINESS,  
ECONOMIC DEVELOPMENT & TOURISM****OFFICE OF PLANNING**

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Ref. No. P-13167

November 10, 2010

Mr. Leonard Aragon, SMC/EAF  
Air Force Satellite Control Network  
483 North Aviation Boulevard  
Los Angeles Air Force Base, California 90245-2808

Dear Mr. Aragon:

Subject: Hawaii Coastal Zone Management (CZM) Program Federal Consistency  
Review for Hawaii Tracking Station A-Side Antenna Remote Block Change  
Upgrade at Kaena Point Satellite Tracking Station, Waianae, Oahu

The proposed Hawaii Tracking Station A-Side Antenna Remote Block Change Upgrade at Kaena Point Satellite Tracking Station (KPSTS) has been reviewed for consistency with the Hawaii CZM Program. We concur with your determination that the activity is consistent to the maximum extent practicable with the enforceable policies of the Hawaii CZM Program, on the basis that the environmental mitigation measures represented in the consistency determination are fully implemented.

CZM consistency concurrence is not an endorsement of the project nor does it convey approval with any other regulations administered by any State or County agency. Thank you for your cooperation in complying with the Hawaii CZM Program. If you have any questions, please call John Nakagawa of our CZM Program at (808) 587-2878.

Sincerely,

A handwritten signature in black ink, appearing to read "Abbey Seth Mayer", with a long horizontal line extending to the right.

Abbey Seth Mayer  
Director

c: Ms. Lynn Cruz, KPSTS  
Department of Land and Natural Resources,  
Office of Conservation and Coastal Lands  
Department of Planning and Permitting, City and County of Honolulu

***APPENDIX B***

***AIR EMISSIONS CALCULATIONS***

Table B-1. Demolition and Construction Equipment Use				
Equipment Type	Number of Units	Days on Site	Hours Per Day	Operating Hours
Excavators Composite	1	115	4	460
Rollers Composite	1	173	8	1384
Rubber Tired Dozers Composite	1	115	8	920
Plate Compactors Composite	2	115	4	920
Trenchers Composite	2	58	8	928
Air Compressors	2	115	4	920
Cement & Mortar Mixers	2	115	6	1380
Cranes	2	115	7	1610
Generator Sets	2	115	4	920
Tractors/Loaders/Backhoes	2	230	7	3220
Pavers Composite	1	58	8	464
Paving Equipment	2	58	8	928

Table B-2. Heavy Equipment Emission Factors (lbs/hour)							
Equipment	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Excavators Composite	0.5828	1.3249	0.1695	0.0013	0.0727	0.0727	119.6
Rollers Composite	0.4341	0.8607	0.1328	0.0008	0.0601	0.0601	67.1
Rubber Tired Dozers Composite	1.5961	3.2672	0.3644	0.0025	0.1409	0.1409	239.1
Plate Compactors Composite	0.0263	0.0328	0.0052	0.0001	0.0021	0.0021	4.3
Trenchers Composite	0.5080	0.8237	0.1851	0.0007	0.0688	0.0688	66.8
Air Compressors	0.3782	0.7980	0.1232	0.0007	0.0563	0.0563	63.6
Cement and Mortar Mixers	0.0447	0.0658	0.0113	0.0001	0.0044	0.0044	7.2
Cranes	0.6011	1.6100	0.1778	0.0014	0.0715	0.0715	128.7
Generator Sets	0.3461	0.6980	0.1075	0.0007	0.0430	0.0430	61.0
Tractors/Loaders/Backhoes	0.4063	0.7746	0.1204	0.0008	0.0599	0.0599	66.8
Pavers Composite	0.5874	1.0796	0.1963	0.0009	0.0769	0.0769	77.9
Paving Equipment	0.0532	0.1061	0.0166	0.0002	0.0063	0.0063	69.0

Source: CARB, 2009.

Table B-3. Demolition and Construction Equipment Emissions (tons)							
Equipment	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Excavators Composite	0.1341	0.3047	0.0390	0.0003	0.0167	0.0167	27.5
Rollers Composite	0.3004	0.5956	0.0919	0.0005	0.0416	0.0416	46.4
Rubber Tired Dozers Composite	0.7342	1.5029	0.1676	0.0011	0.0648	0.0648	110.0
Plate Compactors Composite	0.0121	0.0151	0.0024	0.0000	0.0010	0.0010	2.0
Trenchers Composite	0.2357	0.3822	0.0859	0.0003	0.0319	0.0319	31.0
Air Compressors	0.1740	0.3671	0.0567	0.0003	0.0259	0.0259	29.3
Cement and Mortar Mixers	0.0309	0.0454	0.0078	0.0001	0.0031	0.0031	5.0
Cranes	0.4839	1.2961	0.1432	0.0011	0.0576	0.0576	103.6
Generator Sets	0.1592	0.3211	0.0494	0.0003	0.0198	0.0198	28.1
Tractors/Loaders/Backhoes	0.6542	1.2470	0.1939	0.0012	0.0964	0.0964	107.6
Pavers Composite	0.1363	0.2505	0.0455	0.0002	0.0178	0.0178	18.1
Paving Equipment	0.0247	0.0492	0.0077	0.0001	0.0029	0.0029	32.0
<b>Total</b>	<b>3.08</b>	<b>6.38</b>	<b>0.89</b>	<b>0.0057</b>	<b>0.38</b>	<b>0.38</b>	<b>540.4</b>

Table B-4. Painting				
VOC Content	0.84	lbs/gallon		
Coverage	400	sqft/gallon		
Emission Factor	0.0021	lbs/sqft		
Building/Facility	Area [sqft]	Wall Surface	VOC [lbs]	VOC [tons]
All Buildings Combined	15000	30000	63.0	0.032
Total	15000	30000	63.00	0.03

Source: SQAQMD, 1993.

Table B-5. Delivery of Equipment and Supplies							
Number of Trips/day	4						
Miles Per Trip	30						
Days of Construction	230						
Total Miles	27600						
Pollutant	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Emission Factor (lbs/mile)	0.0219	0.0237	0.0030	0.0000	0.0009	0.0007	2.7
Total Emissions (lbs)	605.80	654.47	82.60	0.71	23.63	20.41	75056.4
Total Emissions (tons)	0.30	0.33	0.04	0.0004	0.01	0.01	37.5

Source: CARB, 2009.

Table B-6. Paving Off Gasses			
VOC Emissions Factor	2.62	lbs/acre	
Building/Facility	Area [acres]	VOC [lbs]	VOC [tons]
All Combined Parking	0.46	1.21	0.0006
Total	0.46	1.21	0.0006

Source: SQAQMD, 1993.

Table B-7. Surface Disturbance						
TSP Emissions	80	lb/acre				
PM10/TSP	0.45					
PM2.5/PM10	0.15					
Period of Disturbance	30	days				
Capture Fraction	0.5					
Building/Facility	Area [acres]	TSP[lbs]	PM <sub>10</sub> [lbs]	PM <sub>10</sub> [tons]	PM <sub>2.5</sub> [lbs]	PM <sub>2.5</sub> [tons]
All Facilities	0.8	1932	869	0.43	65	0.03
Total	0.8	1932	869	0.43	65	0.03

Sources: USEPA, 1996, 2005.

Table B-8. Worker Commutes							
Number of Workers	30						
Number of Trips	2						
Miles Per Trip	30						
Days of Construction	230						
Total Miles	414000						
Pollutant	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Emission Factor (lbs/mile)	0.0105	0.0011	0.0011	0.0000	0.0001	0.0001	1.1
Total Emissions (lbs)	4367.05	456.59	446.79	4.45	35.21	21.91	30347.1
Total Emissions (tons)	2.18	0.23	0.22	0.0022	0.02	0.01	15.2

Source: CARB, 2009.

Table B-9. Total Construction Emissions (tons)							
Activity/Source	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Construction Equipment	3.08	6.38	0.89	0.0057	0.38	0.38	540.4
Painting	0.00	0.00	0.03	0.0000	0.00	0.00	0.0
Delivery of Equipment and Supplies	0.30	0.33	0.04	0.0004	0.01	0.01	37.5
Paving Off Gasses	0.00	0.00	0.00	0.0000	0.00	0.00	0.0
Surface Disturbance	0.00	0.00	0.00	0.0000	0.43	0.03	0.0
Worker Commutes	2.18	0.23	0.22	0.0022	0.02	0.01	15.2
Total Construction Emissions	5.57	6.93	1.19	0.0083	0.84	0.43	593.1

Table A-10. Emergency Generators									
			CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>
Generator Rating	65 kW	Emission Factor (lbs/hp-hr)	0.007	0.031	0.002	0.002	0.002	0.002	154
Annual Run Time	100 hr/yr	Total Emissions (lbs)	58.2	270.2	21.5	17.9	19.2	19.2	1342341.0
Annual Power	8717 hp-hr/yr	Total Emissions (tons)	0.029	0.135	0.0107	0.0089	0.0096	0.0096	671.2

Note: Calculations conservatively assumed a 65 kW generator and used AP-42 emission factors.

Source: USEPA, 1995

## References

California Air Resources Board (CARB). 2009. *EMFAC 2007 (v2.3) Emission Factors (On-Road)*.URL: <http://www.aqmd.gov/CEQA/handbook/onroad/onroad.html>, accessed March 16, 2010.South Coast Air Quality Management District (SCAQMD). 1993. *CEQA Air Quality Handbook*.United States Environmental Protection Agency (USEPA). 1995. Compilation of Air Pollutant Emission Factors, AP-42, 5th edition, Vol. I: *Stationary Point and Area Sources*.\_\_\_\_\_. 2005. *Methodology to Estimate the Transportable Fraction (TF) of Fugitive Dust Emissions for Regional and Urban Scale Air Quality Analyses*.

## ***APPENDIX C***

### ***COMMENTS AND RESPONSES ON THE DRAFT ENVIRONMENTAL ASSESSMENT***

**Comments and Responses on the  
Draft Environmental Assessment for  
Hawaii Tracking Station A-Side Antenna Remote Block Change Upgrade at  
Kaena Point Satellite Tracking Station, Hawaii**

This appendix contains a photocopy of the comment documents received on the Draft Environmental Assessment (EA). During review of the Draft EA, the USAF received comment letters from the Hawaii Department of Land and Natural Resources (DLNR), and the Pacific Justice and Reconciliation Center. In the following letters, comment numbers have been added along the right margins and are numbered sequentially. A corresponding list of USAF responses to the comments is provided immediately following each letter or set of letters.



NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



WILLIAM J. AILA, JR.  
INTERIM CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT



**STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION**

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

December 29, 2010

SMC/ENE  
Attn: Mr. Leonard Aragon  
483 North Aviation Boulevard  
El Segundo, California 90245-2808

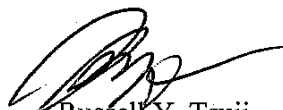
Ladies and Gentlemen:

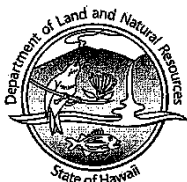
Subject: Draft Environmental Assessment for Hawaii Tracking Station (HTS) A-Side Antenna Remote Block Change Upgrade at Kaena Point Satellite Tracking station (KPSTS) dated December 2010

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR), Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

Other than the comments from Land Division-Oahu District, Division of State Parks, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Historic Preservation will be submitting comments through a separate letter. Should you have any questions, please feel free to call our office at 587-0414. Thank you.

Sincerely,

  
Russell Y. Tsuji  
Administrator

NEIL  
GC. KRCROMBIE  
OF HAWAIIWILLIAM J. AILA, JR.  
INTERIM CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENTSTATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISIONPOST OFFICE BOX 621  
HONOLULU, HAWAII 96809  
Phone: (808) 587-0433  
Fax: (808) 587-0455

December 14, 2010

MEMORANDUMTO: *fr*

## DLNR Agencies:

- ☒ Div. of Aquatic Resources
- ☐ Div. of Boating & Ocean Recreation
- ☒ Engineering Division
- ☒ Div. of Forestry & Wildlife
- ☒ Div. of State Parks
- ☒ Commission on Water Resource Management
- ☒ Office of Conservation & Coastal Lands
- ☒ Land Division - Oahu District

FROM: *10*Charlene Unoki, Assistant Administrator *Charlene*

SUBJECT:

Draft Environmental Assessment for Hawaii Tracking Station (HTS) A-Side Antenna Remote Block Change Upgrade at Kaena Point Satellite Tracking Station (KPSTS)

LOCATION: Island of Oahu

APPLICANT: United States Air Force

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by December 28, 2010.

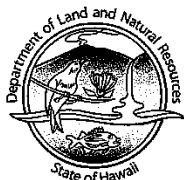
If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

## Attachments

- ( ) We have no objections.
- (✓) We have no comments.
- ( ) Comments are attached.

Signed: *TC*Date: *12/15/10* *fr*

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



**STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES**

DIVISION OF STATE PARKS  
POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

WILLIAM J. AILA, JR.  
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GUY KAULUKUKUI  
INTERIM FIRST DEPUTY


LENORE N. OHYE  
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

December 15, 2010

MEMORANDUM

To: Russell Y. Tsuji, Administrator  
Land Division

From: Daniel S. Quinn, Administrator   
Division of State Parks

Subject: Draft EA for the Hawai'i Tracking Station A-Side Antenna Remote Block Change  
Upgrade at Ka'ena Point Satellite Tracking Station by the U.S. Air Force

We have reviewed the draft EA and are pleased to note that a section 106 consultation with the State Historic Preservation Division was completed in November of this year. Our comments during the early consultation phase of this project recommended that consultation be made with that agency.

Prior to work being performed at the tracking station, we would appreciate contact with Eric Kato, O'ahu District Superintendent be made so that he is aware that the work will be commencing. He can be reached by phone at 733-9102 or by email to: Eric.K.Kato@hawaii.gov. Thank you for the opportunity to review and comment on the proposed project.

DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

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LAND DIVISION

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## **RESPONSES TO HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES COMMENTS (DECEMBER 15 AND 29, 2010)**

### **Response to Comment #1**

As of January 31, 2011, the USAF has not received any comments on the Draft EA from the Hawaii State Historic Preservation Division (SHPD). As described in Section 4.1.1.5 of the Final EA, consultations with the SHPD were completed in early December 2010.

### **Response to Comment #2**

On January 28, 2011, the USAF notified (via electronic mail) Mr. Eric Kato, Oahu District Superintendent, of the Proposed Action ground breaking scheduled for February 24, 2011. Mr. Kato responded on the same day that no additional information is required at this time.

Dr. Kaleo Patterson  
Pacific Justice and Reconciliation Center

Comments to Draft EA for the Hawaii Tracking Station A-Side at Kaena Point Satellite  
Tracking Station, Hawaii  
December 29, 2010

3.1.5.1 Historic Buildings and Structures:

In the historical development of buildings and structures from the 1930s on, it is reported that certain historical / cultural sites, and traditional cultural properties, have been adversely impacted. One documented example is Mokaena Heiau, a site identified and documented in the 1930's as the highest heiau in Hawaii. This heiau may have been one of two on Oahu dedicated to the sun. The astronomical significance of this area must be considered with the other Kaneloa Heiau, near Waikiki, and the ceremonies which continue to this day with Makahiki.

The scope of this project and proposed demolition and construction, merits a re-investigation Mokaena Heiau, and efforts to establish its location. One possible hypothesis is that Mokaena Heiau was destroyed by development to make way for construction. A reference in the Honolulu Star Bulletin on July 16, 1958, by James Heckman, discusses the Army's role in developing the facilities for the Air Force.

3.1.5.2 Archeological Resources

Related to comments above, it is important to reconsider and reinvigorate archeological efforts, towards the sensitivities and awareness of re-evaluating, using current documented materials, new available literature, other forensic scientific methods and technologies, to resurvey the area in anticipation and with the purpose of finding new evidence of the location of the Mokaena Heiau. This is to be accomplished alongside of the proposed project demolition and construction. Archeological monitoring of all ground disturbances can play a key role, but particularly where previous construction may have destroyed the Heiau, sensitivity to remaining evidence would be vital.

More references to McAllister's work and others from modern day, in the EA.

3.1.5.3 Traditional Cultural Properties

Review of relationship of Moaena Heiau and Kaneloa Heiau, and the traditional sun, moon, stars, sighting and ceremonies, for instance the current day research and practices related to Makahiki and Solstice Ceremonies.

Considerations to the navigational and astronomical relevance, sun and moon have been deficient in the past. A modern day study, utilizing new research of source material and studies of the area, in particular the Heiau at Kuoakala, and Leina a la a ka uhane would be productive. This would be valuable to the future role of this area, taking in to consideration the historical religious and spiritual significance of both the mauka and makai.

## RESPONSES TO PACIFIC JUSTICE AND RECONCILIATION CENTER COMMENTS (DECEMBER 29, 2010)

### Response to Comment #1

In his comments, Dr. Kaleo Patterson suggests that the scope of the project merits further efforts to investigate for the Mokaena Heiau (ceremonial site) and establish its location. Background research conducted during the cultural resources assessment of the Proposed Action's area of potential effect (APE) found that the Mokaena Heiau was originally recorded in the early 1930s (McAllister, 1933), and later relocated during an archaeological survey in the 1980s (Hammatt and Borthwick, 1987). It is actually located outside of the KPSTS boundary approximately 0.2 mi (0.5 km) southwest of the closest possible work site (Alternative 2 – Demolition of Building 39006). Thus, the location of the Mokaena Heiau precludes impacts on potential astronomical functions under the Proposed Action.

Reference in the comments is also made to incorporating consideration of astronomical significance of the area and its Hawaiian cultural resource sites. Aspects of astronomical significance are covered in the *Integrated Cultural Resources Management Plan for Kaena Point Satellite Tracking Station, Island of O'ahu, State of Hawai'i* (Tomonari-Tuggle, 2008) relative to the Kuokalā Heiau (temple). Research, however, has shown that there is no evidence for the Kuokalā Heiau to be located within the project APE. As described in Section 3.1.5 of the EA, surveys of the project APE identified no additional archaeological resources.

### References:

- Hammatt, H.H., and D.K. Borthwick. 1987. *Archaeological Survey and Testing at the Ka'ena Point Satellite Tracking Station, Wai'anae and Waialua, O'ahu, TMK 6-9-3:3, Kuaokala, Waialua, O'ahu*. Prepared for the US Army Corps of Engineers.
- McAllister, J. Gilbert. 1933. *Archaeology of Oahu*. The Museum, Honolulu. Reprint 1976, Kraus Reprint Company, New York.
- Tomonari-Tuggle, M.J. 2008. *Integrated Cultural Resources Management Plan for Kaena Point Satellite Tracking Station, Island of O'ahu, State of Hawai'i*. August.